C203955

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH, N.C.

CONTRACT BONDS

FOR CONTRACT NO. C203955

WBS 45492.3.1 NHS-0070(154)

T.I.P NO. <u>R-5516</u>

COUNTY OF <u>CRAVEN</u>

THIS IS THE ROADWAY & STRUCTURE CONTRACT

ROUTE NUMBER US 70 LENGTH 1.169 MILES

LOCATION <u>INTERCHANGE FROM US-70 TO SLOCUM ROAD AT THE CHERRY POINT</u>

MILITARY BASE.

CONTRACTOR S T WOOTEN CORPORATION

ADDRESS P.O. BOX 2408

WILSON, NC 278942408

BIDS OPENED JUNE 20, 2017

CONTRACT EXECUTION 7/20/2017

CONTRACT EXECUTION

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH, N.C.

PROPOSAL

INCLUDES ADDENDUM No. 1 DATED 06-14-2017

DATE AND TIME OF BID OPENING: JUNE 20, 2017 AT 2:00 PM

CONTRACT ID C203955 WBS 45492.3.1

FEDERAL-AID NO. NHS-0070(154)

COUNTY CRAVEN
T.I.P. NO. R-5516
MILES 1.169
ROUTE NO. US 70

LOCATION INTERCHANGE FROM US-70 TO SLOCUM ROAD AT THE CHERRY POINT

MILITARY BASE.

TYPE OF WORK GRADING, DRAINAGE, PAVING, SIGNALS & STRUCTURES.

NOTICE:

ALL BIDDERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE BIDDER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS \$30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD. BIDDERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOTWITHSTANDING THESE LIMITATIONS ON BIDDING, THE BIDDER WHO IS AWARDED ANY FEDERAL - AID FUNDED PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING.

BIDS WILL BE RECEIVED AS SHOWN BELOW:

THIS IS A ROADWAY & STRUCTURE PROPOSAL

5% BID BOND OR BID DEPOSIT REQUIRED

PROPOSAL FOR THE CONSTRUCTION OF CONTRACT No. C203955 IN CRAVEN COUNTY, NORTH CAROLINA

| Date | 20 |
|------|----|
|------|----|

DEPARTMENT OF TRANSPORTATION, RALEIGH, NORTH CAROLINA

The Bidder has carefully examined the location of the proposed work to be known as Contract No. C203955 has carefully examined the plans and specifications, which are acknowledged to be part of the proposal, the special provisions, the proposal, the form of contract, and the forms of contract payment bond and contract performance bond; and thoroughly understands the stipulations, requirements and provisions. The undersigned bidder agrees to bound upon his execution of the bid and subsequent award to him by the Board of Transportation in accordance with this proposal to provide the necessary contract payment bond and contract performance bond within fourteen days after the written notice of award is received by him. The undersigned Bidder further agrees to provide all necessary machinery, tools, labor, and other means of construction; and to do all the work and to furnish all materials, except as otherwise noted, necessary to perform and complete the said contract in accordance with the 2012 Standard Specifications for Roads and Structures by the dates(s) specified in the Project Special Provisions and in accordance with the requirements of the Engineer, and at the unit or lump sum prices, as the case may be, for the various items given on the sheets contained herein.

The Bidder shall provide and furnish all the materials, machinery, implements, appliances and tools, and perform the work and required labor to construct and complete State Highway Contract No. <u>C203955</u> in <u>Craven County</u>, for the unit or lump sum prices, as the case may be, bid by the Bidder in his bid and according to the proposal, plans, and specifications prepared by said Department, which proposal, plans, and specifications show the details covering this project, and hereby become a part of this contract.

The published volume entitled *North Carolina Department of Transportation, Raleigh, Standard Specifications for Roads and Structures, January 2012* with all amendments and supplements thereto, is by reference incorporated into and made a part of this contract; that, except as herein modified, all the construction and work included in this contract is to be done in accordance with the specifications contained in said volume, and amendments and supplements thereto, under the direction of the Engineer.

If the proposal is accepted and the award is made, the contract is valid only when signed either by the Contract Officer or such other person as may be designated by the Secretary to sign for the Department of Transportation. The conditions and provisions herein cannot be changed except over the signature of the said Contract Officer.

The quantities shown in the itemized proposal for the project are considered to be approximate only and are given as the basis for comparison of bids. The Department of Transportation may increase or decrease the quantity of any item or portion of the work as may be deemed necessary or expedient.

An increase or decrease in the quantity of an item will not be regarded as sufficient ground for an increase or decrease in the unit prices, nor in the time allowed for the completion of the work, except as provided for the contract.

Accompanying this bid is a bid bond secured by a corporate surety, or certified check payable to the order of the Department of Transportation, for five percent of the total bid price, which deposit is to be forfeited as liquidated damages in case this bid is accepted and the Bidder shall fail to provide the required payment and performance bonds with the Department of Transportation, under the condition of this proposal, within 14 calendar days after the written notice of award is received by him, as provided in the *Standard Specifications*; otherwise said deposit will be returned to the Bidder.

SEAL 022071 S

State Contract Officer

Ronald Elton Davenport, Ir.

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C203955 R-5516 Craven County

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PROJECT SPECIAL PROVISIONS

GENERAL

CONTRACT TIME AND LIQUIDATED DAMAGES:

(8-15-00) (Rev. 12-18-07) 108 SP1 G07 A

The date of availability for this contract is **July 31, 2017**, except that work in jurisdictional waters and wetlands shall not begin until a meeting between the DOT, Regulatory Agencies, and the Contractor is held as stipulated in the permits contained elsewhere in this proposal. This delay in availability has been considered in determining the contract time for this project.

The completion date for this contract is **March 13, 2020**.

Except where otherwise provided by the contract, observation periods required by the contract will not be a part of the work to be completed by the completion date and/or intermediate contract times stated in the contract. The acceptable completion of the observation periods that extend beyond the final completion date shall be a part of the work covered by the performance and payment bonds.

The liquidated damages for this contract are **Two Hundred Dollars** (\$ 200.00) per calendar day. These liquidated damages will not be cumulative with any liquidated damages which may become chargeable under Intermediate Contract Time Number 1.

INTERMEDIATE CONTRACT TIME NUMBER 1 AND LIQUIDATED DAMAGES:

(7-1-95) (Rev. 2-21-12) 108 SPI GI3

Except for that work required under the Project Special Provisions entitled *Planting, Reforestation* and/or *Permanent Vegetation Establishment*, included elsewhere in this proposal, the Contractor will be required to complete all work included in this contract and shall place and maintain traffic on same.

The date of availability for this intermediate contract time is **July 31, 2017**.

The completion date for this intermediate contract time is **September 15, 2019**.

The liquidated damages for this intermediate contract time are **Two Thousand Dollars** (\$ 2,000.00) per calendar day.

Upon apparent completion of all the work required to be completed by this intermediate date, a final inspection will be held in accordance with Article 105-17 and upon acceptance, the Department will assume responsibility for the maintenance of all work except *Planting*, *Reforestation* and/or *Permanent Vegetation Establishment*. The Contractor will be responsible for and shall make corrections of all damages to the completed roadway caused by his planting operations, whether occurring prior to or after placing traffic through the project.

INTERMEDIATE CONTRACT TIME NUMBER 2 AND LIQUIDATED DAMAGES:

(2-20-07) 108 SPI G14 A

The Contractor shall complete the required work of installing, maintaining, and removing the traffic control devices for lane closures and restoring traffic to the existing traffic pattern. The Contractor shall not close or narrow a lane of traffic on **US 70 or Slocum Road** during the following time restrictions:

DAY AND TIME RESTRICTIONS

Monday through Sunday 4:00 AM to 9:00 AM 3:00 PM to 9:00 PM

In addition, the Contractor shall not close or narrow a lane of traffic on **US 70 or Slocum Road**, detain and/or alter the traffic flow on or during holidays, holiday weekends, special events, or any other time when traffic is unusually heavy, including the following schedules:

HOLIDAY AND HOLIDAY WEEKEND LANE CLOSURE RESTRICTIONS

- 1. For **unexpected occurrence** that creates unusually high traffic volumes, as directed by the Engineer.
- 2. For **New Year's Day**, between the hours of **4:00 AM** December 31st and **9:00 PM** January 2nd. If New Year's Day is on a Friday, Saturday, Sunday or Monday, then until **9:00 PM** the following Tuesday.
- 3. For **Easter**, between the hours of **4:00 AM** Thursday and **9:00 PM** Monday.
- 4. For **Memorial Day**, between the hours of **4:00 AM** Friday and **9:00 PM** Tuesday.
- 5. For **Independence Day**, between the hours of **4:00 AM** the day before Independence Day and **9:00 PM** the day after Independence Day.
 - If **Independence Day** is on a Friday, Saturday, Sunday or Monday, then between the hours of **4:00 AM** the Thursday before Independence Day and **9:00 PM** the Tuesday after Independence Day.
- 6. For **Labor Day**, between the hours of **4:00 AM** Friday and **9:00 PM** Tuesday.
- 7. For **Thanksgiving Day**, between the hours of **4:00 AM** Tuesday and **9:00 PM** Monday.
- 8. For **Christmas**, between the hours of **4:00 AM** the Friday before the week of Christmas Day and **9:00 PM** the following Tuesday after the week of Christmas Day.

Holidays and holiday weekends shall include New Year's, Easter, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas. The Contractor shall schedule his work so that lane closures will not be required during these periods, unless otherwise directed by the Engineer.

The time of availability for this intermediate contract work shall be the time the Contractor begins to install all traffic control devices for lane closures according to the time restrictions listed herein.

The completion time for this intermediate contract work shall be the time the Contractor is required to complete the removal of all traffic control devices for lane closures according to the time restrictions stated above and place traffic in the existing traffic pattern.

The liquidated damages are **Five Hundred Dollars** (\$ 500.00) per fifteen (15) minute time period.

INTERMEDIATE CONTRACT TIME NUMBER 3 AND LIQUIDATED DAMAGES:

(2-20-07) (Rev. 10-15-13)

SP1 G14 E

The Contractor shall complete the required work of installing, maintaining and removing the traffic control devices for road closures and restoring traffic to the existing traffic pattern. The Contractor shall not close **US 70** during the following time restrictions:

DAY AND TIME RESTRICTIONS

Monday through Sunday 4:00 AM to 9:00 PM

The maximum allowable time for girder hanging is 30 minutes for US 70. The Contractor shall reopen the travel lanes to traffic until any resulting traffic queue is depleted.

The time of availability for this intermediate contract time will be the time the Contractor begins to install traffic control devices required for the road closures according to the time restrictions stated herein.

The completion time for this intermediate contract time will be the time the Contractor is required to complete the removal of traffic control devices required for the road closures according to the time restrictions stated herein and restore traffic to the existing traffic pattern.

The liquidated damages are **Two Thousand Dollars** (\$ 2,000.00) per thirty (30) minute time period.

PERMANENT VEGETATION ESTABLISHMENT:

(2-16-12) (Rev. 10-15-13)

SP1 G16

Establish a permanent stand of the vegetation mixture shown in the contract. During the period between initial vegetation planting and final project acceptance, perform all work necessary to establish permanent vegetation on all erodible areas within the project limits, as well as, in borrow and waste pits. This work shall include erosion control device maintenance and installation, repair seeding and mulching, supplemental seeding and mulching, mowing, and fertilizer topdressing, as directed. All work shall be performed in accordance with the applicable section of the 2012 Standard Specifications. All work required for initial vegetation planting shall be performed as a part of the work necessary for the completion and acceptance of the Intermediate Contract Time (ICT). Between the time of ICT and Final Project acceptance, or otherwise referred to as the vegetation establishment period, the Department will be responsible for preparing the required National Pollutant Discharge Elimination System (NPDES) inspection records.

Once the Engineer has determined that the permanent vegetation establishment requirement has been achieved at an 80% vegetation density (the amount of established vegetation per given area to stabilize the soil) and no erodible areas exist within the project limits, the Contractor will be notified to remove the remaining erosion control devices that are no longer needed. The Contractor will be responsible for, and shall correct any areas disturbed by operations performed in permanent vegetation establishment and the removal of temporary erosion control measures, whether occurring prior to or after placing traffic on the project.

Payment for Response for Erosion Control, Seeding and Mulching, Repair Seeding, Supplemental Seeding, Mowing, Fertilizer Topdressing, Silt Excavation, and Stone for Erosion Control will be made at contract unit prices for the affected items. Work required that is not represented by contract line items will be paid in accordance with Articles 104-7 or 104-3 of the 2012 Standard Specifications. No additional compensation will be made for maintenance and removal of temporary erosion control items.

DELAY IN RIGHT OF ENTRY:

(7-1-95) (Rev. 7-15-14) 108 SPI G22

The Contractor will not be allowed right of entry to the following parcel(s) prior to the listed date(s) unless otherwise permitted by the Engineer.

| Parcel No. | Property Owner | <u>Date</u> |
|------------|------------------|-------------|
| 18 | City of Havelock | 10/01/17 |
| 22 | City of Havelock | 5/01/18 |

MAJOR CONTRACT ITEMS:

(2-19-02) 104 SPI G28

The following listed items are the major contract items for this contract (see Article 104-5 of the 2012 Standard Specifications):

| Line # | Description |
|--------|---|
| 44 | Asphalt Concrete Base Course, Type B25.0C |
| 268 | MSE Retaining Wall No. 1 |

SPECIALTY ITEMS:

(7-1-95)(Rev. 1-17-12) 108-6 SPI G37

Items listed below will be the specialty items for this contract (see Article 108-6 of the 2012 Standard Specifications).

| Line # | Description |
|--------------|-----------------------------|
| 80-87 | Guardrail |
| 88-94 | Fencing |
| 98-113 | Signing |
| 129-140, 145 | Long-Life Pavement Markings |
| 146-147 | Permanent Pavement Markers |
| 150-178 | Utility Construction |
| 180-211, 213 | Erosion Control |
| 212 | Reforestation |
| 214-262 | Signals/ITS System |

SPECIAL REQUIREMENTS FOR WORK IN NATIONAL FOREST:

(7-1-95) 107-13 SP1 G40

In addition to other requirements in this proposal with respect to clearing, erosion control, protection of environment, etc., comply with the following requirements:

- (A) Comply with the portions of these Special Requirements, entitled "Fire Plan," "Clearing Plan," and "Landscape and Erosion Control Plan." Note the fact that merchantable timber within Forest Service Property will become the property of the Contractor.
- (B) Comply with the following recommendations of the State Fish and Game Department and Forest Service for wildlife and fish management:
 - (1) Take all necessary precautions to avoid damage to fish habitat and exercise every reasonable precaution to prevent muddying or silting live streams.
 - (2) Do not deposit material removed from the roadway or channel changes in live streams or into the streams or stream channel where it would be washed away by high stream flows.
 - (3) Do not haul materials, including logs, brush, and debris, by fording live streams. Instead, provide temporary bridges or other structures for this purpose.
- (C) Dispose of waste material resulting from slides during construction and surplus material at locations approved by the Forest Supervisor. Submit a plan showing the proposed method of disposal at the time approval is requested.
- (D) Treat sections of existing road to be abandoned as a result of the proposed new construction, as designated by the Forest Supervisor, to restore them to their natural state. The necessary treatment will be determined during a joint review between the Forest Service and the State and may include ripping of roadbed, removal of drainage structure, and opening drainage channels. Plans and specifications as mutually deemed appropriate to accomplish the objective will become a part of this stipulation.

- (E) Permanently monument the right of way prior to completion of construction in accordance with State requirements for such right of way, but in any event the minimum requirements will be to place permanent monuments at the intersection of right of way with all property lines, section lines, and at intervals of not more than 1,000 feet along the right-of-way limits.
- (F) Re-establish or restore public land monuments disturbed or destroyed by construction, reconstruction, or maintenance according to instructions of the Bureau of Land Management, Department of the Interior. Do not damage, destroy, or obliterate other land monuments and property corners or witness markers without the prior permission of the Regional Forester. Relocate or re-establish these land monuments, property corners, and witness markers in accordance with standards satisfactory to the Regional Forester.

Fire Protection Plan

During the period of construction, perform both independently and in cooperation with the Forest Service everything that is reasonable and practical to prevent and suppress forest fires on the easement area and in its immediate vicinity. Include provisions in all subcontracts for the construction of the road requiring subcontractors and their respective employees to do likewise. The contractors and subcontractors, shall conform to, but not be limited to, the following Fire Plan:

- (A) Take immediate independent or cooperative action to control and extinguish any fire, regardless of cause, within the easement area and its vicinity.
- (B) Maintain at readily available sites one or more boxes of fire fighting tools to be furnished by the Forest Service for forest fire fighting purposes only.
- (C) Perform debris burning only in the center of the right of way, and only after a strip 20 feet wide around each pile is cleared to mineral soil.
- (D) Keep fires compact by throwing in the larger material as it burns. If piles are too close together or burn hot, light every second or third pile; allow these to cool down before firing the others. On slopes start burning at the top and work down. Confine fires to piles at all times.
- (E) Do not leave fires unattended.
- (F) Discontinue burning upon notification by the District Forest Ranger or his representative that fire danger is such that there is abnormal risk.
- (G) Whenever a fire escapes, notify the District Ranger immediately even if the fire is suppressed without Forest Service assistance.
- (H) The contractor or subcontractor responsible will bear the costs, including Forest Service direct costs and value of resources damages, incurred by the Forest Service in controlling and extinguishing any fire on or threatening National Forest lands which they or their employees caused with or without negligence in connection with construction operations.

(I) Contact the District Ranger 24 hours in advance of burning.

Clearing Plan

Conform to the following clearing plan:

- (A) Dispose of unmerchantable materials including tops, branches, etc., by piling and burning as directed by the Forest Service or used in brush barriers. Alternate methods of disposal, including any of the following methods or combinations of methods (lop and scatter, chip, remove, pile only), shall be approved in advance by the Forest Service.
- (B) The maximum clearing and grubbing limits are to be as shown on the plans except that cutting of hazard trees outside these limits may be done with approval. Confine construction machinery within the clearing limits.

Landscape and Erosion Control Plan

The erosion control plan will be designed and implemented to prevent visible sediment, as defined by NC DEQ regulations, from reaching any defined stream channel.

Conform to, but not be limited to, the following Landscape and Erosion Control Plan.

- (A) Prevent visible sediment from entering any stream channel. If an erosion control practice must be sited in a channel, it shall stop further down-channel transport of visible sediment.
- (B) Bear responsibility for the prevention and control of soil erosion and gullying on the right of way and lands adjacent thereto resulting from the construction of maintenance of the road. Revegetate with grass (not Love Grass) or herbaceous plants all ground where the soil has been exposed. Accomplish revegetation within 20 working days following final grading.
- (C) Round the ends of cut sections and the tops of back slopes.
- (D) Vegetate all front and back slopes by liming, fertilizing, mulching and seeding; including any waste area. Mulch critical areas if they are to be exposed greater than 5 working days of probable inclement weather during seasons when seeding is impracticable. Critical areas include all bare soils within 100 feet (slope distance) of perennial and intermittent streams. Mulch these as soon as practical and after final seeding.
- (E) Maintain all erosion control practices in a timely manner to prevent visible sediment from entering any stream channel, until such time that the final revegetation stabilizes the site and prevents erosion and off-site movement of sediment.

FUEL PRICE ADJUSTMENT:

(11-15-05) (Rev. 2-18-14) 109-8 SP1 G43

Revise the 2012 Standard Specifications as follows:

Page 1-83, Article 109-8, Fuel Price Adjustments, add the following:

The base index price for DIESEL #2 FUEL is \$ 1.6615 per gallon. Where any of the following are included as pay items in the contract, they will be eligible for fuel price adjustment.

The pay items and the fuel factor used in calculating adjustments to be made will be as follows:

| Description | Units | Fuel Usage Factor Diesel |
|--|---------|-----------------------------|
| Unclassified Excavation | Gal/CY | 0.29 |
| Borrow Excavation | Gal/CY | 0.29 |
| Class IV Subgrade Stabilization | Gal/Ton | 0.55 |
| Aggregate Base Course | Gal/Ton | 0.55 |
| Sub-Ballast | Gal/Ton | 0.55 |
| Asphalt Concrete Base Course, Type | Gal/Ton | 2.90 |
| Asphalt Concrete Intermediate Course, Type | Gal/Ton | 2.90 |
| Asphalt Concrete Surface Course, Type | Gal/Ton | 2.90 |
| Open-Graded Asphalt Friction Course | Gal/Ton | 2.90 |
| Permeable Asphalt Drainage Course, Type Gal/Ton 2.90 | | 2.90 |
| Sand Asphalt Surface Course, Type | | 2.90 |
| Aggregate for Cement Treated Base Course Gal | | 0.55 |
| Portland Cement for Cement Treated Base Course | Gal/Ton | 0.55 |
| " Portland Cement Concrete Pavement | Gal/SY | 0.245 |
| Concrete Shoulders Adjacent to" Pavement | Gal/SY | 0.245 |

SCHEDULE OF ESTIMATED COMPLETION PROGRESS:

(7-15-08) (Rev. 5-16-17) 108-2 SPI G58

The Contractor's attention is directed to the Standard Special Provision entitled *Availability of Funds Termination of Contracts* included elsewhere in this proposal. The Department of Transportation's schedule of estimated completion progress for this project as required by that Standard Special Provision is as follows:

| | Fiscal Year | Progress (% of Dollar Value) |
|------|---------------------|------------------------------|
| 2018 | (7/01/17 - 6/30/18) | 57% of Total Amount Bid |
| 2019 | (7/01/18 - 6/30/19) | 38% of Total Amount Bid |
| 2020 | (7/01/19 - 6/30/20) | 5% of Total Amount Bid |

The Contractor shall also furnish his own progress schedule in accordance with Article 108-2 of the 2012 Standard Specifications. Any acceleration of the progress as shown by the Contractor's progress schedule over the progress as shown above shall be subject to the approval of the Engineer.

DISADVANTAGED BUSINESS ENTERPRISE:

(10-16-07)(Rev. 1-17-17) 102-15(J) SPI G61

Description

The purpose of this Special Provision is to carry out the U.S. Department of Transportation's policy of ensuring nondiscrimination in the award and administration of contracts financed in whole or in part with Federal funds. This provision is guided by 49 CFR Part 26.

Definitions

Additional DBE Subcontractors - Any DBE submitted at the time of bid that will <u>not</u> be used to meet the DBE goal. No submittal of a Letter of Intent is required.

Committed DBE Subcontractor - Any DBE submitted at the time of bid that is being used to meet the DBE goal by submission of a Letter of Intent. Or any DBE used as a replacement for a previously committed DBE firm.

Contract Goal Requirement - The approved DBE participation at time of award, but not greater than the advertised contract goal.

DBE Goal - A portion of the total contract, expressed as a percentage, that is to be performed by committed DBE subcontractor(s).

Disadvantaged Business Enterprise (DBE) - A firm certified as a Disadvantaged Business Enterprise through the North Carolina Unified Certification Program.

Goal Confirmation Letter - Written documentation from the Department to the bidder confirming the Contractor's approved, committed DBE participation along with a listing of the committed DBE firms.

Manufacturer - A firm that operates or maintains a factory or establishment that produces on the premises, the materials or supplies obtained by the Contractor.

Regular Dealer - A firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials or supplies required for the performance of the contract are bought, kept in stock, and regularly sold to the public in the usual course of business. A regular dealer engages in, as its principal business and in its own name, the purchase and sale or lease of the products in question. A regular dealer in such bulk items as steel, cement, gravel, stone, and petroleum products need not keep such products in stock, if it owns and operates distribution equipment for the products. Brokers and packagers are not regarded as manufacturers or regular dealers within the meaning of this section.

North Carolina Unified Certification Program (NCUCP) - A program that provides comprehensive services and information to applicants for DBE certification, such that an applicant is required to apply only once for a DBE certification that will be honored by all recipients of USDOT funds in the state and not limited to the Department of Transportation only. The Certification Program is in accordance with 49 CFR Part 26.

United States Department of Transportation (USDOT) - Federal agency responsible for issuing regulations (49 CFR Part 26) and official guidance for the DBE program.

Forms and Websites Referenced in this Provision

DBE Payment Tracking System - On-line system in which the Contractor enters the payments made to DBE subcontractors who have performed work on the project. https://apps.dot.state.nc.us/Vendor/PaymentTracking/

DBE-IS *Subcontractor Payment Information* - Form for reporting the payments made to all DBE firms working on the project. This form is for paper bid projects only. https://connect.ncdot.gov/business/Turnpike/Documents/Form%20DBE-IS%20Subcontractor%20Payment%20Information.pdf

RF-1 *DBE Replacement Request Form* - Form for replacing a committed DBE. http://connect.ncdot.gov/projects/construction/Construction%20Forms/DBE%20MBE%20WBE%20Replacement%20Request%20Form.pdf

SAF *Subcontract Approval Form* - Form required for approval to sublet the contract. http://connect.ncdot.gov/projects/construction/Construction%20Forms/Subcontract%20Approval%20Form%20Rev.%202012.zip

JC-1 *Joint Check Notification Form* - Form and procedures for joint check notification. The form acts as a written joint check agreement among the parties providing full and prompt disclosure of the expected use of joint checks.

http://connect.ncdot.gov/projects/construction/Construction% 20 Forms/Joint% 20 Check% 20 Notification% 20 Form.pdf

Letter of Intent - Form signed by the Contractor and the DBE subcontractor, manufacturer or regular dealer that affirms that a portion of said contract is going to be performed by the signed DBE for the amount listed at the time of bid.

http://connect.ncdot.gov/letting/LetCentral/Letter % 20 of % 20 Intent % 20 to % 20 Perform % 20 as % 20 Subcontractor.pdf

Listing of DBE Subcontractors Form - Form for entering DBE subcontractors on a project that will meet this DBE goal. This form is for paper bids only.

http://connect.ncdot.gov/municipalities/Bid%20 Proposals%20 for %20 LGA%20 Content/08%20 DBE%20 Subcontractors%20 (Federal).docx

Subcontractor Quote Comparison Sheet - Spreadsheet for showing all subcontractor quotes in the work areas where DBEs quoted on the project. This sheet is submitted with good faith effort packages.

http://connect.ncdot.gov/business/SmallBusiness/Documents/DBE%20Subcontractor%20Quote%20Comparison%20Example.xls

DBE Goal

The following DBE goal for participation by Disadvantaged Business Enterprises is established for this contract:

Disadvantaged Business Enterprises 10.0%

- (A) If the DBE goal is more than zero, the Contractor shall exercise all necessary and reasonable steps to ensure that DBEs participate in at least the percent of the contract as set forth above as the DBE goal.
- (B) If the DBE goal is zero, the Contractor shall make an effort to recruit and use DBEs during the performance of the contract. Any DBE participation obtained shall be reported to the Department.

Directory of Transportation Firms (Directory)

Real-time information is available about firms doing business with the Department and firms that are certified through NCUCP in the Directory of Transportation Firms. Only firms identified in the Directory as DBE certified shall be used to meet the DBE goal. The Directory can be found at the following link. https://www.ebs.nc.gov/VendorDirectory/default.html

The listing of an individual firm in the directory shall not be construed as an endorsement of the firm's capability to perform certain work.

Listing of DBE Subcontractors

At the time of bid, bidders shall submit <u>all</u> DBE participation that they anticipate to use during the life of the contract. Only those identified to meet the DBE goal will be considered committed, even though the listing shall include both committed DBE subcontractors and additional DBE subcontractors. Additional DBE subcontractor participation submitted at the time of bid will be used toward the Department's overall race-neutral goal. Only those firms with current DBE certification at the time of bid opening will be acceptable for listing in the bidder's submittal of DBE participation. The Contractor shall indicate the following required information:

(A) Electronic Bids

Bidders shall submit a listing of DBE participation in the appropriate section of Expedite, the bidding software of Bid Express[®].

(1) Submit the names and addresses of DBE firms identified to participate in the contract. If the bidder uses the updated listing of DBE firms shown in Expedite, the bidder may use the dropdown menu to access the name and address of the DBE firm.

- (2) Submit the contract line numbers of work to be performed by each DBE firm. When no figures or firms are entered, the bidder will be considered to have no DBE participation.
- (3) The bidder shall be responsible for ensuring that the DBE is certified at the time of bid by checking the Directory of Transportation Firms. If the firm is not certified at the time of the bid-letting, that DBE's participation will not count towards achieving the DBE goal.

(B) Paper Bids

- (1) If the DBE goal is more than zero,
 - (a) Bidders, at the time the bid proposal is submitted, shall submit a listing of *DBE* participation, including the names and addresses on *Listing of DBE* Subcontractors contained elsewhere in the contract documents in order for the bid to be considered responsive. Bidders shall indicate the total dollar value of the DBE participation for the contract.
 - (b) If bidders have no DBE participation, they shall indicate this on the *Listing of DBE Subcontractors* by entering the word "None" or the number "0." This form shall be completed in its entirety. **Blank forms will not be deemed to represent zero participation**. Bids submitted that do not have DBE participation indicated on the appropriate form will not be read publicly during the opening of bids. The Department will not consider these bids for award and the proposal will be rejected.
 - (c) The bidder shall be responsible for ensuring that the DBE is certified at the time of bid by checking the Directory of Transportation Firms. If the firm is not certified at the time of the bid-letting, that DBE's participation will not count towards achieving the corresponding goal.
- (2) If the DBE goal is zero, entries on the Listing of DBE Subcontractors are not required for the zero goal, however any DBE participation that is achieved during the project shall be reported in accordance with requirements contained elsewhere in the special provision.

DBE Prime Contractor

When a certified DBE firm bids on a contract that contains a DBE goal, the DBE firm is responsible for meeting the goal or making good faith efforts to meet the goal, just like any other bidder. In most cases, a DBE bidder on a contract will meet the DBE goal by virtue of the work it performs on the contract with its own forces. However, all the work that is performed by the DBE bidder and any other DBE subcontractors will count toward the DBE goal. The DBE bidder shall list itself along with any DBE subcontractors, if any, in order to receive credit toward the DBE goal.

For example, if the DBE goal is 45% and the DBE bidder will only perform 40% of the contract work, the prime will list itself at 40%, and the additional 5% shall be obtained through additional DBE participation with DBE subcontractors or documented through a good faith effort.

DBE prime contractors shall also follow Sections A and B listed under *Listing of DBE Subcontractor* just as a non-DBE bidder would.

Written Documentation - Letter of Intent

The bidder shall submit written documentation for each DBE that will be used to meet the DBE goal of the contract, indicating the bidder's commitment to use the DBE in the contract. This documentation shall be submitted on the Department's form titled *Letter of Intent*.

The documentation shall be received in the office of the State Contractor Utilization Engineer or at DBE@ncdot.gov no later than 10:00 a.m. of the sixth calendar day following opening of bids, unless the sixth day falls on an official state holiday. In that situation, it is due in the office of the State Contractor Utilization Engineer no later than 10:00 a.m. on the next official state business day.

If the bidder fails to submit the Letter of Intent from each committed DBE to be used toward the DBE goal, or if the form is incomplete (i.e. both signatures are not present), the DBE participation will not count toward meeting the DBE goal. If the lack of this participation drops the commitment below the DBE goal, the Contractor shall submit evidence of good faith efforts, completed in its entirety, to the State Contractor Utilization Engineer or DBE@ncdot.gov no later than 10:00 a.m. on the eighth calendar day following opening of bids, unless the eighth day falls on an official state holiday. In that situation, it is due in the office of the State Contractor Utilization Engineer no later than 10:00 a.m. on the next official state business day.

Submission of Good Faith Effort

If the bidder fails to meet or exceed the DBE goal, the apparent lowest responsive bidder shall submit to the Department documentation of adequate good faith efforts made to reach the DBE goal.

A hard copy and an electronic copy of this information shall be received in the office of the State Contractor Utilization Engineer or at DBE@ncdot.gov no later than 10:00 a.m. on the sixth calendar day following opening of bids unless the sixth day falls on an official state holiday. In that situation, it is due in the office of the State Contractor Utilization Engineer no later than 10:00 a.m. on the next official state business day. If the contractor cannot send the information electronically, then one complete set and 9 copies of this information shall be received under the same time constraints above.

Note: Where the information submitted includes repetitious solicitation letters, it will be acceptable to submit a representative letter along with a distribution list of the firms that were solicited. Documentation of DBE quotations shall be a part of the good faith effort submittal. This documentation may include written subcontractor quotations, telephone log notations of verbal quotations, or other types of quotation documentation.

Consideration of Good Faith Effort for Projects with DBE Goals More Than Zero

Adequate good faith efforts mean that the bidder took all necessary and reasonable steps to achieve the goal which, by their scope, intensity, and appropriateness, could reasonably be expected to obtain sufficient DBE participation. Adequate good faith efforts also mean that the bidder actively and aggressively sought DBE participation. Mere *pro forma* efforts are not considered good faith efforts.

The Department will consider the quality, quantity, and intensity of the different kinds of efforts a bidder has made. Listed below are examples of the types of actions a bidder will take in making a good faith effort to meet the goal and are not intended to be exclusive or exhaustive, nor is it intended to be a mandatory checklist.

- (A) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising, written notices, use of verifiable electronic means through the use of the NCDOT Directory of Transportation Firms) the interest of all certified DBEs who have the capability to perform the work of the contract. The bidder must solicit this interest within at least 10 days prior to bid opening to allow the DBEs to respond to the solicitation. Solicitation shall provide the opportunity to DBEs within the Division and surrounding Divisions where the project is located. The bidder must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.
- (B) Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved.
 - (1) Where appropriate, break out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces.
 - (2) Negotiate with subcontractors to assume part of the responsibility to meet the contract DBE goal when the work to be sublet includes potential for DBE participation (2nd and 3rd tier subcontractors).
- (C) Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.
- (D) (1) Negotiating in good faith with interested DBEs. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.
 - (2) A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take

a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidding contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

- (E) Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associates and political or social affiliations (for example, union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.
- (F) Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or bidder.
- (G) Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.
- (H) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; Federal, State, and local minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs. Contact within 7 days from the bid opening the Business Opportunity and Work Force Development Unit at DBE@ncdot.gov to give notification of the bidder's inability to get DBE quotes.
- (I) Any other evidence that the bidder submits which shows that the bidder has made reasonable good faith efforts to meet the DBE goal.

In addition, the Department may take into account the following:

- (1) Whether the bidder's documentation reflects a clear and realistic plan for achieving the DBE goal.
- (2) The bidders' past performance in meeting the DBE goals.
- (3) The performance of other bidders in meeting the DBE goal. For example, when the apparent successful bidder fails to meet the DBE goal, but others meet it, you may reasonably raise the question of whether, with additional reasonable efforts the apparent successful bidder could have met the goal. If the apparent successful bidder fails to meet the DBE goal, but meets or exceeds the average DBE participation obtained by other bidders, the Department may view this, in conjunction with other factors, as evidence of the apparent successful bidder having made a good faith effort.

If the Department does not award the contract to the apparent lowest responsive bidder, the Department reserves the right to award the contract to the next lowest responsive bidder that can satisfy to the Department that the DBE goal can be met or that an adequate good faith effort has been made to meet the DBE goal.

Non-Good Faith Appeal

The State Contractual Services Engineer will notify the contractor verbally and in writing of non-good faith. A contractor may appeal a determination of non-good faith made by the Goal Compliance Committee. If a contractor wishes to appeal the determination made by the Committee, they shall provide written notification to the State Contractual Services Engineer or at DBE@ncdot.gov. The appeal shall be made within 2 business days of notification of the determination of non-good faith.

Counting DBE Participation Toward Meeting DBE Goal

(A) Participation

The total dollar value of the participation by a committed DBE will be counted toward the contract goal requirement. The total dollar value of participation by a committed DBE will be based upon the value of work actually performed by the DBE and the actual payments to DBE firms by the Contractor.

(B) Joint Checks

Prior notification of joint check use shall be required when counting DBE participation for services or purchases that involves the use of a joint check. Notification shall be through submission of Form JC-1 (*Joint Check Notification Form*) and the use of joint checks shall be in accordance with the Department's Joint Check Procedures.

(C) Subcontracts (Non-Trucking)

A DBE may enter into subcontracts. Work that a DBE subcontracts to another DBE firm may be counted toward the contract goal requirement. Work that a DBE subcontracts to a non-DBE firm does <u>not</u> count toward the contract goal requirement. If a DBE contractor or subcontractor subcontracts a significantly greater portion of the work of the contract than would be expected on the basis of standard industry practices, it shall be presumed that the DBE is not performing a commercially useful function. The DBE may present evidence to rebut this presumption to the Department. The Department's decision on the rebuttal of this presumption is subject to review by the Federal Highway Administration but is not administratively appealable to USDOT.

(D) Joint Venture

When a DBE performs as a participant in a joint venture, the Contractor may count toward its contract goal requirement a portion of the total value of participation with the DBE in the joint venture, that portion of the total dollar value being a distinct clearly defined portion of work that the DBE performs with its forces.

(E) Suppliers

A contractor may count toward its DBE requirement 60 percent of its expenditures for materials and supplies required to complete the contract and obtained from a DBE regular dealer and 100 percent of such expenditures from a DBE manufacturer.

(F) Manufacturers and Regular Dealers

A contractor may count toward its DBE requirement the following expenditures to DBE firms that are not manufacturers or regular dealers:

- (1) The fees or commissions charged by a DBE firm for providing a *bona fide* service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a DOT-assisted contract, provided the fees or commissions are determined to be reasonable and not excessive as compared with fees and commissions customarily allowed for similar services.
- (2) With respect to materials or supplies purchased from a DBE, which is neither a manufacturer nor a regular dealer, count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site (but not the cost of the materials and supplies themselves), provided the fees are determined to be reasonable and not excessive as compared with fees customarily allowed for similar services.

Commercially Useful Function

(A) DBE Utilization

The Contractor may count toward its contract goal requirement only expenditures to DBEs that perform a commercially useful function in the work of a contract. A DBE performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. To perform a commercially useful function, the DBE shall also be responsible with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering the material and installing (where applicable) and paying for the material itself. To determine whether a DBE is performing a commercially useful function, the Department will evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the contract is commensurate with the work it is actually performing and the DBE credit claimed for its performance of the work, and any other relevant factors.

(B) DBE Utilization in Trucking

The following factors will be used to determine if a DBE trucking firm is performing a commercially useful function:

- (1) The DBE shall be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there shall not be a contrived arrangement for the purpose of meeting DBE goals.
- (2) The DBE shall itself own and operate at least one fully licensed, insured, and operational truck used on the contract.
- (3) The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.
- (4) The DBE may subcontract the work to another DBE firm, including an owner-operator who is certified as a DBE. The DBE who subcontracts work to another DBE receives credit for the total value of the transportation services the subcontracted DBE provides on the contract.
- (5) The DBE may also subcontract the work to a non-DBE firm, including from an owner-operator. The DBE who subcontracts the work to a non-DBE is entitled to credit for the total value of transportation services provided by the non-DBE subcontractor not to exceed the value of transportation services provided by DBE-owned trucks on the contract. Additional participation by non-DBE subcontractors receives credit only for the fee or commission it receives as a result of the subcontract arrangement. The value of services performed under subcontract agreements between the DBE and the Contractor will not count towards the DBE contract requirement.
- (6) A DBE may lease truck(s) from an established equipment leasing business open to the general public. The lease must indicate that the DBE has exclusive use of and control over the truck. This requirement does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. This type of lease may count toward the DBE's credit as long as the driver is under the DBE's payroll.
- (7) Subcontracted/leased trucks shall display clearly on the dashboard the name of the DBE that they are subcontracted/leased to and their own company name if it is not identified on the truck itself. Magnetic door signs are not permitted.

DBE Replacement

When a Contractor has relied on a commitment to a DBE firm (or an approved substitute DBE firm) to meet all or part of a contract goal requirement, the contractor shall not terminate the DBE for convenience. This includes, but is not limited to, instances in which the Contractor seeks to perform the work of the terminated subcontractor with another DBE subcontractor, a non-DBE

subcontractor, or with the Contractor's own forces or those of an affiliate. A DBE may only be terminated after receiving the Engineer's written approval based upon a finding of good cause for the termination. The prime contractor must give the DBE firm five (5) calendar days to respond to the prime contractor's notice of termination and advise the prime contractor and the Department of the reasons, if any, why the firm objects to the proposed termination of its subcontract and why the Department should not approve the action.

All requests for replacement of a committed DBE firm shall be submitted to the Engineer for approval on Form RF-1 (*DBE Replacement Request*). If the Contractor fails to follow this procedure, the Contractor may be disqualified from further bidding for a period of up to 6 months.

The Contractor shall comply with the following for replacement of a committed DBE:

(A) Performance Related Replacement

When a committed DBE is terminated for good cause as stated above, an additional DBE that was submitted at the time of bid may be used to fulfill the DBE commitment. A good faith effort will only be required for removing a committed DBE if there were no additional DBEs submitted at the time of bid to cover the same amount of work as the DBE that was terminated.

If a replacement DBE is not found that can perform at least the same amount of work as the terminated DBE, the Contractor shall submit a good faith effort documenting the steps taken. Such documentation shall include, but not be limited to, the following:

- (1) Copies of written notification to DBEs that their interest is solicited in contracting the work defaulted by the previous DBE or in subcontracting other items of work in the contract.
- (2) Efforts to negotiate with DBEs for specific subbids including, at a minimum:
 - (a) The names, addresses, and telephone numbers of DBEs who were contacted.
 - (b) A description of the information provided to DBEs regarding the plans and specifications for portions of the work to be performed.
- (3) A list of reasons why DBE quotes were not accepted.
- (4) Efforts made to assist the DBEs contacted, if needed, in obtaining bonding or insurance required by the Contractor.

(B) Decertification Replacement

(1) When a committed DBE is decertified by the Department after the SAF (*Subcontract Approval Form*) has been received by the Department, the Department will not require the Contractor to solicit replacement DBE participation equal to the remaining work to be performed by the decertified firm. The

participation equal to the remaining work performed by the decertified firm will count toward the contract goal requirement.

(2) When a committed DBE is decertified prior to the Department receiving the SAF (*Subcontract Approval Form*) for the named DBE firm, the Contractor shall take all necessary and reasonable steps to replace the DBE subcontractor with another DBE subcontractor to perform at least the same amount of work to meet the DBE goal requirement. If a DBE firm is not found to do the same amount of work, a good faith effort must be submitted to NCDOT (see A herein for required documentation).

Changes in the Work

When the Engineer makes changes that result in the reduction or elimination of work to be performed by a committed DBE, the Contractor will not be required to seek additional participation. When the Engineer makes changes that result in additional work to be performed by a DBE based upon the Contractor's commitment, the DBE shall participate in additional work to the same extent as the DBE participated in the original contract work.

When the Engineer makes changes that result in extra work, which has more than a minimal impact on the contract amount, the Contractor shall seek additional participation by DBEs unless otherwise approved by the Engineer.

When the Engineer makes changes that result in an alteration of plans or details of construction, and a portion or all of the work had been expected to be performed by a committed DBE, the Contractor shall seek participation by DBEs unless otherwise approved by the Engineer.

When the Contractor requests changes in the work that result in the reduction or elimination of work that the Contractor committed to be performed by a DBE, the Contractor shall seek additional participation by DBEs equal to the reduced DBE participation caused by the changes.

Reports and Documentation

A SAF (*Subcontract Approval Form*) shall be submitted for all work which is to be performed by a DBE subcontractor. The Department reserves the right to require copies of actual subcontract agreements involving DBE subcontractors.

When using transportation services to meet the contract commitment, the Contractor shall submit a proposed trucking plan in addition to the SAF. The plan shall be submitted prior to beginning construction on the project. The plan shall include the names of all trucking firms proposed for use, their certification type(s), the number of trucks owned by the firm, as well as the individual truck identification numbers, and the line item(s) being performed.

Within 30 calendar days of entering into an agreement with a DBE for materials, supplies or services, not otherwise documented by the SAF as specified above, the Contractor shall furnish the Engineer a copy of the agreement. The documentation shall also indicate the percentage (60% or 100%) of expenditures claimed for DBE credit.

Reporting Disadvantaged Business Enterprise Participation

The Contractor shall provide the Engineer with an accounting of payments made to all DBE firms, including material suppliers and contractors at all levels (prime, subcontractor, or second tier subcontractor). This accounting shall be furnished to the Engineer for any given month by the end of the following month. Failure to submit this information accordingly may result in the following action:

- (A) Withholding of money due in the next partial pay estimate; or
- (B) Removal of an approved contractor from the prequalified bidders' list or the removal of other entities from the approved subcontractors list.

While each contractor (prime, subcontractor, 2nd tier subcontractor) is responsible for accurate accounting of payments to DBEs, it shall be the prime contractor's responsibility to report all monthly and final payment information in the correct reporting manner.

Failure on the part of the Contractor to submit the required information in the time frame specified may result in the disqualification of that contractor and any affiliate companies from further bidding until the required information is submitted.

Failure on the part of any subcontractor to submit the required information in the time frame specified may result in the disqualification of that contractor and any affiliate companies from being approved for work on future DOT projects until the required information is submitted.

Contractors reporting transportation services provided by non-DBE lessees shall evaluate the value of services provided during the month of the reporting period only.

At any time, the Engineer can request written verification of subcontractor payments.

The Contractor shall report the accounting of payments through the Department's DBE Payment Tracking System.

Failure to Meet Contract Requirements

Failure to meet contract requirements in accordance with Subarticle 102-15(J) of the 2012 Standard Specifications may be cause to disqualify the Contractor.

CERTIFICATION FOR FEDERAL-AID CONTRACTS:

SP1 G85

The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

(A) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the

- entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (B) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, *Disclosure Form to Report Lobbying*, in accordance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by *Section 1352*, *Title 31*, *U.S. Code*. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such subrecipients shall certify and disclose accordingly.

CONTRACTOR'S LICENSE REQUIREMENTS:

(7-1-95) 102-14

SP1 G88

If the successful bidder does not hold the proper license to perform any plumbing, heating, air conditioning, or electrical work in this contract, he will be required to sublet such work to a contractor properly licensed in accordance with *Article 2 of Chapter 87 of the General Statutes* (licensing of heating, plumbing, and air conditioning contractors) and *Article 4 of Chapter 87* of the *General Statutes* (licensing of electrical contractors).

U.S. DEPARTMENT OF TRANSPORTATION HOTLINE:

SP1 G100

To report bid rigging activities call: 1-800-424-9071

The U.S. Department of Transportation (DOT) operates the above toll-free hotline Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the hotline to report such activities.

The hotline is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

CARGO PREFERENCE ACT:

(2-16-16)

Privately owned United States-flag commercial vessels transporting cargoes are subject to the Cargo Preference Act (CPA) of 1954 requirements and regulations found in 46 CFR 381.7. Contractors are directed to clause (b) of 46 CFR 381.7 as follows:

- (b) Contractor and Subcontractor Clauses. "Use of United States-flag vessels: The contractor agrees-
 - "(1) To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.
 - (2) To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b) (1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.
 - (3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract."

SUBSURFACE INFORMATION:

(7-1-95) 450 SPI GI12 D

Subsurface information is available on the roadway and structure portions of this project.

LOCATING EXISTING UNDERGROUND UTILITIES:

(3-20-12) 105 SPI G115

Revise the 2012 Standard Specifications as follows:

Page 1-43, Article 105-8, line 28, after the first sentence, add the following:

Identify excavation locations by means of pre-marking with white paint, flags, or stakes or provide a specific written description of the location in the locate request.

VALUE ENGINEERING PROPOSAL:

(05-19-15) 104 SP01 G116

Revise the 2012 Standard Specifications as follows:

Page 1-36, Subarticle 104-12(B) Evaluation of Proposals, lines 42-44, replace the fourth sentence of the second paragraph with the following:

Pending execution of a formal supplemental agreement implementing an approved VEP and transferal of final plans (hard copy and electronic) sealed by an engineer licensed in the State of North Carolina incorporating an approved VEP to the Resident Engineer and the State Value Management Engineer, the Contractor shall remain obligated to perform the work in accordance with the terms of the existing contract.

Page 1-37, Subarticle 104-12(D) Preliminary Review, lines 9-12, replace the first sentence of the first paragraph with the following:

Should the Contractor desire a preliminary review of a possible VEP, before expending considerable time and expense in full development, a copy of the Preliminary VEP shall be submitted to the Resident Engineer and the State Value Management Engineer at ValueManagementUnit@ncdot.gov.

Page 1-37, Subarticle 104-12(E) Final Proposal, lines 22-23, replace the first sentence of the first paragraph with the following:

A copy of the Final VEP shall be submitted by the Contractor to the Resident Engineer and the State Value Management Engineer at ValueManagementUnit@ncdot.gov.

Page 1-38, Subarticle 104-12(F) Modifications, lines 2-8, replace the first paragraph with the following:

To facilitate the preparation of revisions to contract drawings, the Contractor may purchase reproducible copies of drawings for his use through the Department's Value Management Unit. The preparation of new design drawings by or for the Contractor shall be coordinated with the appropriate Design Branch through the State Value Management Engineer. The Contractor shall provide, at no charge to the Department, one set of reproducible drawings of the approved design needed to implement the VEP. Drawings (hard copy and electronic) which are sealed by an engineer licensed in the State of North Carolina shall be submitted to the State Value Management Engineer no later than ten (10) business days after acceptance of a VEP unless otherwise permitted.

Page 1-38, Subarticle 104-12(F) Modifications, line 17, add the following at the end of the third paragraph:

Supplemental agreements executed for design-bid-build contracts shall reflect any realized savings in the corresponding line items. Supplemental agreements executed for design-build contracts shall add one line item deducting the full savings from the total contract price and one line item crediting the Contractor with 50% of the total VEP savings.

Page 1-38, Subarticle 104-12(F) Modifications, lines 45-47, replace the eighth paragraph with the following:

Unless and until a supplemental agreement is executed and issued by the Department and final plans (hard copy and electronic) sealed by an engineer licensed in the State of North Carolina incorporating an approved VEP have been provided to the Resident Engineer and the State Value Management Engineer, the Contractor shall remain obligated to perform the work in accordance with the terms of the existing contract.

RESOURCE CONSERVATION AND ENV. SUSTAINABLE PRACTICES:

(5-21-13) (Rev. 5-19-15) 104-13 SPI G118

In accordance with North Carolina Executive Order 156, NCGS 130A-309.14(3), and NCGS 136-28.8, it is the objective of the Department to aid in the reduction of materials that become a part of

our solid waste stream, to divert materials from landfills, to find ways to recycle and reuse materials, to consider and minimize, where economically feasible, the environmental impacts associated with agency land use and acquisition, construction, maintenance and facility management for the benefit of the Citizens of North Carolina.

To achieve the mission of reducing environmental impacts across the state, the Department is committed to supporting the efforts to initiate, develop and use products and construction methods that incorporate the use of recycled, solid waste products and environmentally sustainable practices in accordance with Article 104-13 of the *Standard Specifications*.

Report the quantities of reused or recycled materials either incorporated in the project or diverted from landfills and any practice that minimizes the environmental impact on the project annually on the Project Construction Reuse and Recycling Reporting Form. The Project Construction Reuse and Recycling Reporting Form and a location tool for local recycling facilities are available at:

http://connect.ncdot.gov/resources/Environmental/Pages/North-Carolina-Recycling-Locations.aspx.

Submit the Project Construction Reuse and Recycling Reporting Form by August 1 annually to <u>valuemanagementunit@ncdot.gov</u>. For questions regarding the form or reporting, please contact the State Value Management Engineer at 919-707-4810.

DOMESTIC STEEL:

(4-16-13) 106 SPI G120

Revise the 2012 Standard Specifications as follows:

Page 1-49, Subarticle 106-1(B) Domestic Steel, lines 2-7, replace the first paragraph with the following:

All steel and iron products that are permanently incorporated into this project shall be produced in the United States except minimal amounts of foreign steel and iron products may be used provided the combined material cost of the items involved does not exceed 0.1% of the total amount bid for the entire project or \$2,500, whichever is greater. If invoices showing the cost of the material are not provided, the amount of the bid item involving the foreign material will be used for calculations. This minimal amount of foreign produced steel and iron products permitted for use is not applicable to high strength fasteners. Domestically produced high strength fasteners are required.

MAINTENANCE OF THE PROJECT:

(11-20-07) (Rev. 1-17-12) 104-10 SP1 G125

Revise the 2012 Standard Specifications as follows:

Page 1-35, Article 104-10 Maintenance of the Project, line 25, add the following after the first sentence of the first paragraph:

All guardrail/guiderail within the project limits shall be included in this maintenance.

Page 1-35, Article 104-10 Maintenance of the Project, line 30, add the following as the last sentence of the first paragraph:

The Contractor shall perform weekly inspections of guardrail and guiderail and shall report damages to the Engineer on the same day of the weekly inspection. Where damaged guardrail or guiderail is repaired or replaced as a result of maintaining the project in accordance with this article, such repair or replacement shall be performed within 7 consecutive calendar days of such inspection report.

Page 1-35, Article 104-10 Maintenance of the Project, lines 42-44, replace the last sentence of the last paragraph with the following:

The Contractor will not be directly compensated for any maintenance operations necessary, except for maintenance of guardrail/guiderail, as this work will be considered incidental to the work covered by the various contract items. The provisions of Article 104-7, Extra Work, and Article 104-8, Compensation and Record Keeping will apply to authorized maintenance of guardrail/guiderail. Performance of weekly inspections of guardrail/guiderail, and the damage reports required as described above, will be considered to be an incidental part of the work being paid for by the various contract items.

TWELVE MONTH GUARANTEE:

(7-15-03) 108 SPI G145

- (A) The Contractor shall guarantee materials and workmanship against latent and patent defects arising from faulty materials, faulty workmanship or negligence for a period of twelve months following the date of final acceptance of the work for maintenance and shall replace such defective materials and workmanship without cost to the Department. The Contractor will not be responsible for damage due to faulty design, normal wear and tear, for negligence on the part of the Department, and/or for use in excess of the design.
- (B) Where items of equipment or material carry a manufacturer's guarantee for any period in excess of twelve months, then the manufacturer's guarantee shall apply for that particular piece of equipment or material. The Department's first remedy shall be through the manufacturer although the Contractor is responsible for invoking the warranted repair work with the manufacturer. The Contractor's responsibility shall be limited to the term of the manufacturer's guarantee. NCDOT would be afforded the same warranty as provided by the Manufacturer.

This guarantee provision shall be invoked only for major components of work in which the Contractor would be wholly responsible for under the terms of the contract. Examples would include pavement structures, bridge components, and sign structures. This provision will not be used as a mechanism to force the Contractor to return to the project to make repairs or perform additional work that the Department would normally compensate the Contractor for. In addition, routine maintenance activities (i.e. mowing grass, debris removal, ruts in earth shoulders,) are not parts of this guarantee.

Appropriate provisions of the payment and/or performance bonds shall cover this guarantee for the project.

To ensure uniform application statewide the Division Engineer will forward details regarding the circumstances surrounding any proposed guarantee repairs to the Chief Engineer for review and approval prior to the work being performed.

IRAN DIVESTMENT ACT:

(5-17-16) SP01 G151

As a result of the Iran Divestment Act of 2015 (Act), Article 6E, N.C. General Statute § 147-86.55, the State Treasurer published the Final Divestment List (List) which includes the Final Divestment List-Iran, and the Parent and Subsidiary Guidance-Iran. These lists identify companies and persons engaged in investment activities in Iran and will be updated every 180 days. The List can be found at https://www.nctreasurer.com/inside-the-department/OpenGovernment/Pages/Iran-Divestment-Act-Resources.aspx

By submitting the Offer, the Contractor certifies that, as of the date of this bid, it is not on the thencurrent List created by the State Treasurer. The Contractor must notify the Department immediately if, at any time before the award of the contract, it is added to the List.

As an ongoing obligation, the Contractor must notify the Department immediately if, at any time during the contract term, it is added to the List. Consistent with § 147-86.59, the Contractor shall not contract with any person to perform a part of the work if, at the time the subcontract is signed, that person is on the then-current List.

During the term of the Contract, should the Department receive information that a person is in violation of the Act as stated above, the Department will offer the person an opportunity to respond and the Department will take action as appropriate and provided for by law, rule, or contract.

GIFTS FROM VENDORS AND CONTRACTORS:

(12-15-09) 107-1 SPI G152

By Executive Order 24, issued by Governor Perdue, and *N.C.G.S.* § 133-32, it is unlawful for any vendor or contractor (i.e. architect, bidder, contractor, construction manager, design professional, engineer, landlord, offeror, seller, subcontractor, supplier, or vendor), to make gifts or to give favors to any State employee of the Governor's Cabinet Agencies (i.e. Administration, Commerce, Correction, Crime Control and Public Safety, Cultural Resources, Environment and Natural Resources, Health and Human Services, Juvenile Justice and Delinquency Prevention, Revenue, Transportation, and the Office of the Governor). This prohibition covers those vendors and contractors who:

- (A) Have a contract with a governmental agency; or
- (B) Have performed under such a contract within the past year; or
- (C) Anticipate bidding on such a contract in the future.

For additional information regarding the specific requirements and exemptions, vendors and contractors are encouraged to review Executive Order 24 and *N.C.G.S.* § 133-32.

Executive Order 24 also encouraged and invited other State Agencies to implement the requirements and prohibitions of the Executive Order to their agencies. Vendors and contractors should contact other State Agencies to determine if those agencies have adopted Executive Order 24.

LIABILITY INSURANCE:

(5-20-14) SPI G160

Revise the 2012 Standard Specifications as follows:

Page 1-60, Article 107-15 LIABILITY INSURANCE, line 16, add the following as the second sentence of the third paragraph:

Prior to beginning services, all contractors shall provide proof of coverage issued by a workers' compensation insurance carrier, or a certificate of compliance issued by the Department of Insurance for self-insured subcontractors, irrespective of whether having regularly in service fewer than three employees.

EROSION AND SEDIMENT CONTROL/STORMWATER CERTIFICATION:

(1.16.17) (Pay 11.22.16) 105.16.225.2.16

SP1 G180

General

Schedule and conduct construction activities in a manner that will minimize soil erosion and the resulting sedimentation and turbidity of surface waters. Comply with the requirements herein regardless of whether or not a National Pollution discharge Elimination System (NPDES) permit for the work is required.

Establish a chain of responsibility for operations and subcontractors' operations to ensure that the *Erosion and Sediment Control/Stormwater Pollution Prevention Plan* is implemented and maintained over the life of the contract.

- (A) Certified Supervisor Provide a certified Erosion and Sediment Control/Stormwater Supervisor to manage the Contractor and subcontractor operations, insure compliance with Federal, State and Local ordinances and regulations, and manage the Quality Control Program.
- (B) *Certified Foreman* Provide a certified, trained foreman for each construction operation that increases the potential for soil erosion or the possible sedimentation and turbidity of surface waters.
- (C) *Certified Installer* Provide a certified installer to install or direct the installation for erosion or sediment/stormwater control practices.
- (D) *Certified Designer* Provide a certified designer for the design of the erosion and sediment control/stormwater component of reclamation plans and, if applicable, for the design of the project erosion and sediment control/stormwater plan.

Roles and Responsibilities

(A) Certified Erosion and Sediment Control/Stormwater Supervisor - The Certified Supervisor shall be Level II and responsible for ensuring the erosion and sediment control/stormwater plan is adequately implemented and maintained on the project and for conducting the quality control program. The Certified Supervisor shall be on the project within 24 hours

notice from initial exposure of an erodible surface to the project's final acceptance. Perform the following duties:

- (1) Manage Operations Coordinate and schedule the work of subcontractors so that erosion and sediment control/stormwater measures are fully executed for each operation and in a timely manner over the duration of the contract.
 - (a) Oversee the work of subcontractors so that appropriate erosion and sediment control/stormwater preventive measures are conformed to at each stage of the work.
 - (b) Prepare the required National Pollutant Discharge Elimination System (NPDES) Inspection Record and submit to the Engineer.
 - (c) Attend all weekly or monthly construction meetings to discuss the findings of the NPDES inspection and other related issues.
 - (d) Implement the erosion and sediment control/stormwater site plans requested.
 - (e) Provide any needed erosion and sediment control/stormwater practices for the Contractor's temporary work not shown on the plans, such as, but not limited to work platforms, temporary construction, pumping operations, plant and storage yards, and cofferdams.
 - (f) Acquire applicable permits and comply with requirements for borrow pits, dewatering, and any temporary work conducted by the Contractor in jurisdictional areas.
 - (g) Conduct all erosion and sediment control/stormwater work in a timely and workmanlike manner.
 - (h) Fully perform and install erosion and sediment control/stormwater work prior to any suspension of the work.
 - (i) Coordinate with Department, Federal, State and Local Regulatory agencies on resolution of erosion and sediment control/stormwater issues due to the Contractor's operations.
 - (j) Ensure that proper cleanup occurs from vehicle tracking on paved surfaces or any location where sediment leaves the Right-of-Way.
 - (k) Have available a set of erosion and sediment control/stormwater plans that are initialed and include the installation date of Best Management Practices. These practices shall include temporary and permanent groundcover and be properly updated to reflect necessary plan and field changes for use and review by Department personnel as well as regulatory agencies.
- (2) Requirements set forth under the NPDES Permit The Department's NPDES Stormwater permit (NCS000250) outlines certain objectives and management measures pertaining to construction activities. The permit references NCG010000, General Permit to Discharge Stormwater under the NPDES, and states that the Department shall incorporate the applicable requirements into its delegated Erosion and Sediment Control Program for construction activities disturbing one or more acres of land. The Department further incorporates these requirements on all contracted bridge and culvert work at jurisdictional waters, regardless of size. Some of the requirements are, but are not limited to:

- (a) Control project site waste to prevent contamination of surface or ground waters of the state, i.e. from equipment operation/maintenance, construction materials, concrete washout, chemicals, litter, fuels, lubricants, coolants, hydraulic fluids, any other petroleum products, and sanitary waste.
- (b) Inspect erosion and sediment control/stormwater devices and stormwater discharge outfalls at least once every 7 calendar days and within 24 hours after a rainfall event of 0.5 inch that occurs within a 24 hour period. Additional monitoring may be required at the discretion of Division of Water Resources personnel if the receiving stream is 303(d) listed for turbidity and the project has had documented problems managing turbidity.
- (c) Maintain an onsite rain gauge or use the Department's Multi-Sensor Precipitation Estimate website to maintain a daily record of rainfall amounts and dates.
- (d) Maintain erosion and sediment control/stormwater inspection records for review by Department and Regulatory personnel upon request.
- (e) Implement approved reclamation plans on all borrow pits, waste sites and staging areas.
- (f) Maintain a log of turbidity test results as outlined in the Department's Procedure for Monitoring Borrow Pit Discharge.
- (g) Provide secondary containment for bulk storage of liquid materials.
- (h) Provide training for employees concerning general erosion and sediment control/stormwater awareness, the Department's NPDES Stormwater Permit NCS000250 requirements, and the applicable requirements of the *General Permit, NCG010000*.
- (i) Report violations of the NPDES permit to the Engineer immediately who will notify the Division of Water Quality Regional Office within 24 hours of becoming aware of the violation.
- (3) Quality Control Program Maintain a quality control program to control erosion, prevent sedimentation and follow provisions/conditions of permits. The quality control program shall:
 - (a) Follow permit requirements related to the Contractor and subcontractors' construction activities.
 - (b) Ensure that all operators and subcontractors on site have the proper erosion and sediment control/stormwater certification.
 - (c) Notify the Engineer when the required certified erosion and sediment control/stormwater personnel are not available on the job site when needed.
 - (d) Conduct the inspections required by the NPDES permit.
 - (e) Take corrective actions in the proper timeframe as required by the NPDES permit for problem areas identified during the NPDES inspections.
 - (f) Incorporate erosion control into the work in a timely manner and stabilize disturbed areas with mulch/seed or vegetative cover on a section-by-section basis.
 - (g) Use flocculants approved by state regulatory authorities where appropriate and where required for turbidity and sedimentation reduction.
 - (h) Ensure proper installation and maintenance of temporary erosion and sediment control devices.

- (i) Remove temporary erosion or sediment control devices when they are no longer necessary as agreed upon by the Engineer.
- (j) The Contractor's quality control and inspection procedures shall be subject to review by the Engineer. Maintain NPDES inspection records and make records available at all times for verification by the Engineer.
- (B) *Certified Foreman* At least one Certified Foreman shall be onsite for each type of work listed herein during the respective construction activities to control erosion, prevent sedimentation and follow permit provisions:
 - (1) Foreman in charge of grading activities
 - (2) Foreman in charge of bridge or culvert construction over jurisdictional areas
 - (3) Foreman in charge of utility activities

The Contractor may request to use the same person as the Level II Supervisor and Level II Foreman. This person shall be onsite whenever construction activities as described above are taking place. This request shall be approved by the Engineer prior to work beginning.

The Contractor may request to name a single Level II Foreman to oversee multiple construction activities on small bridge or culvert replacement projects. This request shall be approved by the Engineer prior to work beginning.

- (C) *Certified Installers* Provide at least one onsite, Level I Certified Installer for each of the following erosion and sediment control/stormwater crew:
 - (1) Seeding and Mulching
 - (2) Temporary Seeding
 - (3) Temporary Mulching
 - (4) Sodding
 - (5) Silt fence or other perimeter erosion/sediment control device installations
 - (6) Erosion control blanket installation
 - (7) Hydraulic tackifier installation
 - (8) Turbidity curtain installation
 - (9) Rock ditch check/sediment dam installation
 - (10) Ditch liner/matting installation
 - (11) Inlet protection
 - (12) Riprap placement
 - (13) Stormwater BMP installations (such as but not limited to level spreaders, retention/detention devices)
 - (14) Pipe installations within jurisdictional areas

If a Level I *Certified Installer* is not onsite, the Contractor may substitute a Level II Foreman for a Level I Installer, provided the Level II Foreman is not tasked to another crew requiring Level II Foreman oversight.

(D) Certified Designer - Include the certification number of the Level III-B Certified Designer on the erosion and sediment control/stormwater component of all reclamation plans and if

applicable, the certification number of the Level III-A Certified Designer on the design of the project erosion and sediment control/stormwater plan.

Preconstruction Meeting

Furnish the names of the *Certified Erosion and Sediment Control/Stormwater Supervisor*, *Certified Foremen*, *Certified Installers* and *Certified Designer* and notify the Engineer of changes in certified personnel over the life of the contract within 2 days of change.

Ethical Responsibility

Any company performing work for the North Carolina Department of Transportation has the ethical responsibility to fully disclose any reprimand or dismissal of an employee resulting from improper testing or falsification of records.

Revocation or Suspension of Certification

Upon recommendation of the Chief Engineer to the certification entity, certification for *Supervisor*, *Certified Foremen*, *Certified Installers* and *Certified Designer* may be revoked or suspended with the issuance of an *Immediate Corrective Action (ICA)*, *Notice of Violation (NOV)*, or *Cease and Desist Order* for erosion and sediment control/stormwater related issues.

The Chief Engineer may recommend suspension or permanent revocation of certification due to the following:

- (A) Failure to adequately perform the duties as defined within this certification provision.
- (B) Issuance of an ICA, NOV, or Cease and Desist Order.
- (C) Failure to fully perform environmental commitments as detailed within the permit conditions and specifications.
- (D) Demonstration of erroneous documentation or reporting techniques.
- (E) Cheating or copying another candidate's work on an examination.
- (F) Intentional falsification of records.
- (G) Directing a subordinate under direct or indirect supervision to perform any of the above actions.
- (H) Dismissal from a company for any of the above reasons.
- (I) Suspension or revocation of one's certification by another entity.

Suspension or revocation of a certification will be sent by certified mail to the certificant and the Corporate Head of the company that employs the certificant.

A certificant has the right to appeal any adverse action which results in suspension or permanent revocation of certification by responding, in writing, to the Chief Engineer within 10 calendar days after receiving notice of the proposed adverse action.

Chief Engineer 1536 Mail Service Center Raleigh, NC 27699-1536 Failure to appeal within 10 calendar days will result in the proposed adverse action becoming effective on the date specified on the certified notice. Failure to appeal within the time specified will result in a waiver of all future appeal rights regarding the adverse action taken. The certificant will not be allowed to perform duties associated with the certification during the appeal process.

The Chief Engineer will hear the appeal and make a decision within 7 days of hearing the appeal. Decision of the Chief Engineer will be final and will be made in writing to the certificant.

If a certification is temporarily suspended, the certificant shall pass any applicable written examination and any proficiency examination, at the conclusion of the specified suspension period, prior to having the certification reinstated.

Measurement and Payment

Certified Erosion and Sediment Control/Stormwater Supervisor, Certified Foremen, Certified Installers and Certified Designer will be incidental to the project for which no direct compensation will be made.

PROCEDURE FOR MONITORING BORROW PIT DISCHARGE:

(2-20-07) (Rev. 3-19-13)

05-16, 230, 801

SP1 G181

Water discharge from borrow pit sites shall not cause surface waters to exceed 50 NTUs (nephelometric turbidity unit) in streams not designated as trout waters and 10 NTUs in streams, lakes or reservoirs designated as trout waters. For lakes and reservoirs not designated as trout waters, the turbidity shall not exceed 25 NTUs. If the turbidity exceeds these levels due to natural background conditions, the existing turbidity level shall not be increased.

If during any operating day, the downstream water quality exceeds the standard, the Contractor shall do all of the following:

- (A) Either cease discharge or modify the discharge volume or turbidity levels to bring the downstream turbidity levels into compliance, or
- (B) Evaluate the upstream conditions to determine if the exceedance of the standard is due to natural background conditions. If the background turbidity measurements exceed the standard, operation of the pit and discharge can continue as long as the stream turbidity levels are not increased due to the discharge.
- (C) Measure and record the turbidity test results (time, date and sampler) at all defined sampling locations 30 minutes after startup and at a minimum, one additional sampling of all sampling locations during that 24-hour period in which the borrow pit is discharging.
- (D) Notify DWQ within 24 hours of any stream turbidity standard exceedances that are not brought into compliance.

During the Environmental Assessment required by Article 230-4 of the 2012 Standard Specifications, the Contractor shall define the point at which the discharge enters into the State's surface waters and the appropriate sampling locations. Sampling locations shall include points upstream and downstream from the point at which the discharge enters these waters. Upstream

sampling location shall be located so that it is not influenced by backwater conditions and represents natural background conditions. Downstream sampling location shall be located at the point where complete mixing of the discharge and receiving water has occurred.

The discharge shall be closely monitored when water from the dewatering activities is introduced into jurisdictional wetlands. Any time visible sedimentation (deposition of sediment) on the wetland surface is observed, the dewatering activity will be suspended until turbidity levels in the stilling basin can be reduced to a level where sediment deposition does not occur. Staining of wetland surfaces from suspended clay particles, occurring after evaporation or infiltration, does not constitute sedimentation. No activities shall occur in wetlands that adversely affect the functioning of a wetland. Visible sedimentation will be considered an indication of possible adverse impacts on wetland use.

The Engineer will perform independent turbidity tests on a random basis. These results will be maintained in a log within the project records. Records will include, at a minimum, turbidity test results, time, date and name of sampler. Should the Department's test results exceed those of the Contractor's test results, an immediate test shall be performed jointly with the results superseding the previous test results of both the Department and the Contractor.

The Contractor shall use the NCDOT Turbidity Reduction Options for Borrow Pits Matrix, available at http://www.ncdot.gov/doh/operations/dp-chief-eng/roadside/fieldops/downloads/Files/TurbidityReductionOptionSheet.pdf to plan, design, construct, and maintain BMPs to address water quality standards. Tier I Methods include stilling basins which are standard compensatory BMPs. Other Tier I methods are noncompensatory and shall be used when needed to meet the stream turbidity standards. Tier II Methods are also noncompensatory and are options that may be needed for protection of rare or unique resources or where special environmental conditions exist at the site which have led to additional requirements being placed in the DWQ's 401 Certifications and approval letters, Isolated Wetland Permits, Riparian Buffer Authorization or a DOT Reclamation Plan's Environmental Assessment for the specific site. Should the Contractor exhaust all Tier I Methods on a site exclusive of rare or unique resources or special environmental conditions, Tier II Methods may be required by regulators on a case by case basis per supplemental agreement.

The Contractor may use cation exchange capacity (CEC) values from proposed site borings to plan and develop the bid for the project. CEC values exceeding 15 milliequivalents per 100 grams of soil may indicate a high potential for turbidity and should be avoided when dewatering into surface water is proposed.

No additional compensation for monitoring borrow pit discharge will be paid.

EMPLOYMENT:

(11-15-11) (Rev. 1-17-12) 108, 102 SPI G184

Revise the 2012 Standard Specifications as follows:

Page 1-20, Subarticle 102-15(O), delete and replace with the following:

(O) Failure to restrict a former Department employee as prohibited by Article 108-5.

Page 1-65, Article 108-5 Character of Workmen, Methods, and Equipment, line 32, delete all of line 32, the first sentence of the second paragraph and the first word of the second sentence of the second paragraph.

STATE HIGHWAY ADMINISTRATOR TITLE CHANGE:

(9-18-12) SPI G185

Revise the 2012 Standard Specifications as follows:

Replace all references to "State Highway Administrator" with "Chief Engineer".

SUBLETTING OF CONTRACT:

(11-18-2014) 108-6 SPI G186

Revise the 2012 Standard Specifications as follows:

Page 1-66, Article 108-6 Subletting of Contract, line 37, add the following as the second sentence of the first paragraph:

All requests to sublet work shall be submitted within 30 days of the date of availability or prior to expiration of 20% of the contract time, whichever date is later, unless otherwise approved by the Engineer.

Page 1-67, Article 108-6 Subletting of Contract, line 7, add the following as the second sentence of the fourth paragraph:

Purchasing materials for subcontractors is not included in the percentage of work required to be performed by the Contractor. If the Contractor sublets items of work but elects to purchase material for the subcontractor, the value of the material purchased will be included in the total dollar amount considered to have been sublet.

PROJECT SPECIAL PROVISIONS

ROADWAY

CLEARING AND GRUBBING - METHOD III:

(4-6-06) (Rev.8-18-15) 20

SP2 R02B

Perform clearing on this project to the limits established by Method "III" shown on Standard Drawing No. 200.03 of the 2012 Roadway Standard Drawings. Conventional clearing methods may be used except where permit drawings or conditions have been included in the proposal which require certain areas to be cleared by hand methods.

TEMPORARY PAVEMENT:

(8-15-00) (Rev. 4-21-15)

1101

SP2 R30A(Rev)

Construct the temporary pavement required on this project in accordance with the plans and as directed by the Engineer.

After the pavement has served its purpose, remove the portions deemed unsuitable for use as a permanent part of the project as directed by the Engineer. Salvage and stockpile the aggregate base course removed at locations within the right of way, as directed by the Engineer, for removal by State Forces. Place pavement and earth material removed in embankments or dispose of in waste areas furnished by the Contractor.

Pipe culverts removed shall remain the property of the Contractor. Pipe culverts that are removed will be measured and will be paid at the contract unit price per linear foot for *Pipe Removal*. Payment for the construction of the temporary pavement will be made at the contract unit prices for the various items involved.

No direct payment will be made for removing the aggregate base course, earth material and pavement, as the cost of same shall be included in the lump sum price bid for *Grading*. Such prices and payments will be full compensation for the work of removing, salvaging, and stockpiling aggregate base course; and for placing earth material and pavement in embankments or disposing of earth material and pavement in waste areas.

SHOULDER AND FILL SLOPE MATERIAL:

(5-21-02) 235, 560

SP2 R45 A

Description

Perform the required shoulder and slope construction for this project in accordance with the applicable requirements of Section 560 and Section 235 of the 2012 Standard Specifications.

Measurement and Payment

Where the material has been obtained from an authorized stockpile or from a borrow source and *Borrow Excavation* is not included in the contract, no direct payment will be made for this work, as the cost of this work will be part of the work being paid at the contract lump sum price for *Grading*. If *Borrow Excavation* is included in this contract and the material has been obtained from an authorized stockpile or from a borrow source, measurement and payment will be as provided in Section 230 of the 2012 Standard Specifications for Borrow Excavation.

MANUFACTURED QUARRY FINES IN EMBANKMENTS:

(01-17-17) 235 SP02 R72

Description

This specification addresses the use of manufactured quarry fines that are not classified as select materials. The specification allows the Contractor an option, with the approval of the Engineer, to use manufactured quarry fines (MQFs) in embankments as a substitute for conventional borrow material. Furnish and place geotextile for pavement stabilization in accordance with the Geotextile for Pavement Stabilization special provision and detail. Geotextile for pavement stabilization is required to prevent pavement cracking and provide separation between the subgrade and pavement section at embankment locations where manufactured quarry fines are utilized and as directed by the Engineer.

Materials

Manufactured Quarry Fines.

Site specific approval of MQFs material will be required prior to beginning construction as detailed in the preconstruction requirements of this provision.

The following MQFs are unacceptable:

- (A) Frozen material,
- (B) Material with a maximum dry unit weight of less than 90 pounds per cubic foot when tested in accordance with AASHTO T-99 Method A or C.
- (C) Material with greater than 80% by weight Passing the #200 sieve

Collect and transport MQFs in a manner that will prevent nuisances and hazards to public health and safety. Moisture condition the MQFs as needed and transport in covered trucks to prevent dusting. If MQFs are blended with natural earth material, follow Borrow Criteria in Section 1018 of the *Standard Specifications*.

Geotextiles.

Areas of embankment where MQFs are incorporated, Geotextile for Pavement Stabilization shall be used. If the Geotextile for Pavement Stabilization special provision is not included elsewhere in this contract, then it along with a detail will be incorporated as part of the contractors request to use. Notification of subgrade elevation, sampling and waiting period as required in the Construction Methods section of the Geotextile for Pavement Stabilization special provision are not required.

Preconstruction Requirements

When MQFs are to be used as a substitute for earth borrow material, request written approval from the Engineer at least ninety (90) days in advance of the intent to use MQFs and include the following details:

- (A) Description, purpose and location of project.
- (B) Estimated start and completion dates of project.
- (C) Estimated volume of MQFs to be used on project with specific locations and construction details of the placement.
- (D) The names, address, and contact information for the generator of the MQFs.
- (E) Physical location of the site at which the MQFs were generated.

The Engineer will forward this information to the State Materials Engineer for review and material approval.

Construction Methods

Place MQFs in the core of the embankment section with at least 4 feet of earth cover to the outside limits of the embankments or subgrade.

Construct embankments by placing MQFs in level uniform lifts with no more than a lift of 10 inches and compacted to at least a density of 95 percent as determined by test methods in AASHTO T-99, Determination of Maximum Dry Density and Optimum Moisture Content, Method A or C depending upon particle size of the product. Provide a moisture content at the time of compaction of within 4 percent of optimum but not greater than one percent above optimum as determined by AASHTO T-99, Method A or C.

Areas of embankment where MQFs are incorporated, Geotextile for Pavement Stabilization shall be used. See Geotextile for Pavement Stabilization special provision for geotextile type and construction method.

Measurement and Payment

Borrow Excavation will be measured by truck volume and paid in cubic yards in accordance with Article 230-5 of the 2012 Standard Specifications. As an alternate weigh tickets can be provided and payment made by converting weight to cubic yards based on the verifiable unit weight. Where the pay item of Geotextile for Pavement Stabilization is included in the original contract the material will be measured and paid in square yards (see Geotextile for Pavement Stabilization special provision). Where the pay item of Geotextile for Pavement Stabilization is not included in the original contract then no payment will be made for this item and will be considered incidental to the use of MQFs in embankment.

ROCK AND BROKEN PAVEMENT FILLS:

(2-16-16) 235 SP2 R85

Revise the 2012 Standard Specifications as follows:

Page 2-22, Article 235-2 MATERIALS, add the following after line 19:

| Item | Section |
|---|---------|
| Geotextile for Rock and Broken Pavement Fills, Type 2 | 1056 |

Provide Type 2 geotextile for filtration geotextiles. Use rip rap and No. 57 stone from either a quarry or onsite material to fill voids in rock and broken pavement fills. Provide small and large

size rip rap with stone sizes that meet Class A and B in accordance with Table 1042-1 and No. 57 stone with a gradation that meets Table 1005-1 or use similar size onsite material approved by the Engineer.

Page 2-23, Subarticle 235-3(B) Embankment Formation, lines 18-19, delete the third sentence in the seventh paragraph.

Page 2-23, Subarticle 235-3(B) Embankment Formation, lines 21-23, replace the eighth paragraph with the following:

Before placing embankment fill material or filtration geotextiles over rock and broken pavement, fill voids in the top of rock and broken pavement fill with rip rap and No. 57 stone. Place and compact larger rip rap first followed by smaller rip rap. Then, fill any remaining voids with No. 57 stone so geotextiles are not torn, ripped or otherwise damaged when installed and covered. Compact rip rap and No. 57 stone with tracked equipment or other approved methods. Install filtration geotextiles on top of rock, broken pavement, rip rap and No. 57 stone in accordance with Article 270-3 before placing remaining embankment fill material.

Remove any rocks, debris or pavement pieces from the roadbed larger than 2" within 12" of the subgrade or finished grade, whichever is lower.

Page 2-24, Article 235-5 MEASUREMENT AND PAYMENT, line 13, add the following to the end of the first paragraph:

Payment for rip rap, No. 57 stone and geotextiles to construct embankments with rock and broken payment fills will be considered incidental to the work in Sections 225, 226, 230 and 240.

PIPE INSTALLATION:

(11-20-12) (Rev. 8-18-15) 300 SP3 R01

Revise the 2012 Standard Specifications as follows:

Page 3-1, Article 300-2, Materials, line 15, in the materials table, replace "Flowable Fill" and "Geotextiles" with the following:

| Item | Section |
|----------------------------|---------|
| Flowable Fill, Excavatable | 1000-6 |
| Grout, Type 2 | 1003 |
| Geotextiles, Type 4 | 1056 |

Page 3-1, Article 300-2, Materials, lines 23-24, replace sentence with the following:

Provide foundation conditioning geotextile and geotextile to wrap pipe joints in accordance with Section 1056 for Type 4 geotextile.

Page 3-3, Subarticle 300-6(A), Rigid Pipe, line 2, in the first paragraph, replace "an approved non-shrink grout." with "grout." and line 4, in the second paragraph, replace "filtration geotextile" with "geotextile".

Page 3-3, Article 300-7, Backfilling, lines 37-38, in the first and second sentences of the fifth paragraph, replace "Excavatable flowable fill" with "Flowable fill".

FLOWABLE FILL:

(9-17-02) (Rev 1-17-12)

300, 340, 1000, 1530, 1540, 1550

SP3 R30

Description

This work consists of all work necessary to place flowable fill in accordance with these provisions, the plans, and as directed.

Materials

Refer to Division 10 of the 2012 Standard Specifications.

ItemSectionFlowable Fill1000-6

Construction Methods

Discharge flowable fill material directly from the truck into the space to be filled, or by other approved methods. The mix may be placed full depth or in lifts as site conditions dictate. The Contractor shall provide a method to plug the ends of the existing pipe in order to contain the flowable fill.

Measurement and Payment

At locations where flowable fill is called for on the plans and a pay item for flowable fill is included in the contract, *Flowable Fill* will be measured in cubic yards and paid as the actual number of cubic yards that have been satisfactorily placed and accepted. Such price and payment will be full compensation for all work covered by this provision including, but not limited to, the mix design, furnishing, hauling, placing and containing the flowable fill.

Payment will be made under:

Pay ItemPay UnitFlowable FillCubic Yard

BRIDGE APPROACH FILLS:

(10-19-10) (Rev. 1-17-12) 422 SP4 R02

Description

Bridge approach fills include bridge approach fills for sub regional tier bridges and reinforced bridge approach fills. Construct bridge approach fills in accordance with the contract and Standard Drawing No. 422.10 or 422.11 of the 2012 Roadway Standard Drawings. Define "geosynthetics" as geotextiles or geomembranes.

Materials

Refer to Division 10 of the 2012 Standard Specifications.

| Item | Section |
|-------------------------------|-----------|
| Anchor Pins | 1056-2 |
| Geotextiles | 1056 |
| Portland Cement Concrete | 1000 |
| Select Material | 1016 |
| Subsurface Drainage Materials | 1044 |
| Wire Staples | 1060-8(D) |

For bridge approach fills for sub regional tier bridges, provide Type 1 geotextile for filtration geotextiles. For reinforced bridge approach fills, provide Type 5 geotextile for geotextile reinforcement and Type 1 geotextile and No. 78M stone for drains. Use Class B concrete for concrete pads.

Use Class III or V select material for reinforced bridge approach fills and only Class V select material (standard size No. 78M stone) for bridge approach fills for sub regional tier bridges. Provide PVC pipes, fittings and outlet pipes for subsurface drainage materials. For drains and PVC pipes behind end bents, use pipes with perforations that meet AASHTO M 278.

Use PVC, HDPE or linear low density polyethylene (LLDPE) geomembranes for reinforced bridge approach fills. For PVC geomembranes, provide grade PVC30 geomembranes that meet ASTM D7176. For HDPE and LLDPE geomembranes, use geomembranes with a nominal thickness of at least 30 mils that meet Geosynthetic Research Institute Standard Specifications GM13 or GM17, respectively. Handle and store geomembranes in accordance with Article 1056-2 of the 2012 Standard Specifications. Provide material certifications for geomembranes in accordance with Article 1056-3 of the 2012 Standard Specifications.

Construction Methods

Excavate as necessary for bridge approach fills in accordance with the contract. Notify the Engineer when foundation excavation is complete. Do not place geomembranes or filtration geotextiles until excavation dimensions and foundation material are approved. Attach geomembranes and filtration geotextiles to end bent cap back and wing walls with adhesives, tapes or other approved methods. Glue or weld geomembrane seams to prevent leakage.

For reinforced bridge approach fills, place geotextile reinforcement within 3" of locations shown in Standard Drawing No. 422.10 of the 2012 Roadway Standard Drawings and in slight tension free of kinks, folds, wrinkles or creases. Install geotextile reinforcement with the orientation, dimensions and number of layers shown in Standard Drawing No. 422.10 of the 2012 Roadway Standard Drawings. Place first layer of geotextile reinforcement directly on geomembranes with no void or material in between. Install geotextile reinforcement with the machine direction (MD) parallel to the roadway centerline. The MD is the direction of the length or long dimension of the geotextile roll. Do not splice or overlap geotextile reinforcement in the MD so seams are perpendicular to the roadway centerline. Wrap geotextile reinforcement at end bent cap back and wing walls as shown in Standard Drawing No. 422.10 of the 2012 Roadway Standard Drawings and directed by the Engineer. Extend geotextile reinforcement at least 4 ft back behind end bent cap back and wing walls into select material.

Overlap adjacent geotextiles at least 18" with seams oriented parallel to the roadway centerline. Hold geotextiles in place with wire staples or anchor pins as needed. Contact the Engineer when existing or future obstructions such as foundations, pavements, pipes, inlets or utilities will interfere with geosynthetics.

For reinforced bridge approach fills, construct one foot square drains consisting of 4" diameter continuous perforated PVC pipes surrounded by No. 78M stone wrapped in Type 1 geotextiles. Install drains in accordance with Standard Drawing No. 422.10 of the 2012 Roadway Standard Drawings. For bridge approach fills for sub regional tier bridges, install 4" diameter continuous perforated PVC drain pipes in accordance with Standard Drawing No. 422.11 of the 2012 Roadway Standard Drawings.

Use solvent cement to connect PVC pipes so joints do not leak. Connect perforated pipes to outlet pipes just behind wing walls. Provide drain pipes and drains with positive drainage towards outlets. Place pipe sleeves in or under wing walls for outlet pipes so positive drainage is maintained. Use sleeves that can withstand wing wall loads.

Place select material in 8" to 10" thick lifts. Use only hand operated compaction equipment to compact select material for bridge approach fills. Compact Class III select material in accordance with Subarticle 235-3(C) of the 2012 Standard Specifications. Compact No. 78M stone with a vibratory compactor to the satisfaction of the Engineer. Do not displace or damage geosynthetics, drain pipes or drains when placing and compacting select material. End dumping directly on geosynthetics is not permitted. Do not operate heavy equipment on geosynthetics, drain pipes or drains until they are covered with at least 8" of select material. Replace any damaged geosynthetics, drain pipes or drains to the satisfaction of the Engineer.

Cover open ends of outlet pipes with rodent screens as shown in Standard Drawing No. 815.03 of the 2012 Roadway Standard Drawings. Connect ends of outlet pipes to concrete pads or existing drainage structures as directed by the Engineer. Construct concrete pads with an Ordinary surface finish that meets Subarticle 825-6(B) of the 2012 Standard Specifications.

Measurement and Payment

| Reinforced Bridge Approach Fill, Station will be paid at the concontract lump sum price for Reinforced Bridge Approach Fill, Scompensation for labor, tools, equipment and reinforced bridge approach backfilling, hauling and removing excavated materials, compacting soutlet pipes to existing drainage structures and supplying select materials pipe sleeves and outlet components and any incidentals necessary to concapproach fills at each bridge. | Station will be full th fill materials, excavating, select material, connecting tials, geosynthetics, drains, |
|--|--|
| Bridge Approach Fill - Sub Regional Tier, Station will be paid price. The contract lump sum price for Bridge Approach Fill - Sub R will be full compensation for labor, tools, equipment and bridge excavating, backfilling, hauling and removing excavated materials, co connecting outlet pipes to existing drainage structures and supplying geotextiles, drain pipes, pipe sleeves and outlet components and any construct all bridge approach fills at each sub regional tier bridge. | e approach fill materials, ompacting No. 78M stone, No. 78M stone, filtration |
| Payment will be made under: | |
| Pay Item Reinforced Bridge Approach Fill, Station Bridge Approach Fill - Sub Regional Tier, Station | Pay Unit Lump Sum Lump Sum |

CLASS IV AGGREGATE STABILIZATION:

(11-18-14) 510 SP5 R12

Description

As directed by the Engineer, stabilize sandy subgrade material with Class IV aggregate to prevent rutting of the subgrade prior to paving directly on the subgrade. Remove material as needed in cut areas prior to placing the Class IV aggregate.

Materials

Refer to Division 10.

ItemSectionSelect Material, Class IV1016

Use Class IV Select Material for Class IV Aggregate Stabilization.

Construction Methods

Class IV Aggregate Stabilization

As directed by the Engineer, place aggregate by end dumping aggregate on approved subgrade soils to provide a working platform and reduce wheel rutting of subgrade material. Place the Class IV aggregate stabilization to a thickness of 2 to 3 inches.

Maintenance

Maintain aggregate stabilization in an acceptable condition and minimize the use of heavy equipment on aggregate in order to avoid damaging the subgrade. Provide and maintain drainage ditches and drains as required to prevent entrapping water in aggregate stabilization.

Measurement and Payment

Class IV Aggregate Stabilization will be measured and paid in tons. Aggregate will be measured by weighing in trucks in accordance with Article 106-7. The contract unit price for Class IV Aggregate Stabilization will be full compensation for furnishing, hauling, handling, placing, mixing, compacting and maintaining aggregate.

The work to excavate material to place Class IV Aggregate Stabilization below subgrade is considered incidental to the work of placing the aggregate and no separate payment will be made.

Payment will be made under:

Pay ItemPay UnitClass IV Aggregate StabilizationTon

AGGREGATE BASE COURSE:

(11-18-14) 520 SP5 R14

Revise the 2012 Standard Specifications as follows:

Page 5-10, Article 520-5 HAULING AND PLACING AGGREGATE BASE MATERIAL, add the following sentence to the end of the first paragraph starting on line 21:

In addition, as approved by the Engineer, place by end dumping aggregate on approved sandy subgrade soils to provide a working platform and reduce wheel rutting of the subgrade. When allowed, end dumping will be limited to a uniformly spread thickness of 2 to 3 inches prior to placing the remaining aggregate thickness with a mechanical spreader.

ASPHALT PAVEMENTS - SUPERPAVE:

(6-19-12) (Rev. 8-16-16) 605, 609, 610, 650 SP6 R01

Revise the 2012 Standard Specifications as follows:

Page 6-3, Article 605-7, APPLICATION RATES AND TEMPERATURES, replace this article, including Table 605-1, with the following:

Apply tack coat uniformly across the existing surface at target application rates shown in Table 605-1.

| TABLE 605-1 APPLICATION RATES FOR TACK COAT | |
|--|----------------------|
| Existing Surface | Target Rate (gal/sy) |
| | Emulsified Asphalt |
| New Asphalt | 0.04 ± 0.01 |
| Oxidized or Milled Asphalt | 0.06 ± 0.01 |
| Concrete | 0.08 ± 0.01 |

Apply tack coat at a temperature within the ranges shown in Table 605-2. Tack coat shall not be overheated during storage, transport or at application.

| TABLE 605-2 APPLICATION TEMPERATURE FOR TACK COAT | |
|--|-------------|
| Asphalt Material Temperature Range | |
| Asphalt Binder, Grade PG 64-22 | 350 - 400°F |
| Emulsified Asphalt, Grade RS-1H | 130 - 160°F |
| Emulsified Asphalt, Grade CRS-1 | 130 - 160°F |
| Emulsified Asphalt, Grade CRS-1H | 130 - 160°F |
| Emulsified Asphalt, Grade HFMS-1 | 130 - 160°F |
| Emulsified Asphalt, Grade CRS-2 | 130 - 160°F |

Page 6-6, Subarticle 607-5(A), Milled Asphalt Pavement, line 25, add the following to the end of the paragraph:

Areas to be paid under these items include mainline, turn lanes, shoulders, and other areas milled in conjunction with the mainline and any additional equipment necessary to remove pavement in the area of manholes, water valves, curb, gutter and other obstructions.

Page 6-6, Subarticle 607-5(C), Incidental Milling, lines 42-48, replace the paragraph with the following:

Incidental Milling to be paid will be the actual number of square yards of surface milled where the Contractor is required to mill butt joints, irregular areas and intersections milled as a separate operation from mainline milling and re-mill areas that are not due to the Contractor's negligence whose length is less than 100 feet. Measurement will be made as provided in Subarticle 607-5(A) for each cut the Contractor is directed to perform. Where the Contractor elects to make multiple cuts to achieve the final depth, no additional measurement will be made. Compensation will be made at the contract unit price per square yard for *Incidental Milling*.

Page 6-7, Article 609-3, FIELD VERIFICATION OF MIXTURE AND JOB MIX FORMULA ADJUSTMENTS, lines 35-37, delete the second sentence of the second paragraph.

Page 6-18, Article 610-1 DESCRIPTION, lines 40-41, delete the last sentence of the last paragraph.

Page 6-19, Subarticle 610-3(A), Mix Design-General, line 5, add the following as the first paragraph:

Warm mix asphalt (WMA) is allowed for use at the Contractor's option in accordance with the NCDOT Approved Products List for WMA Technologies available at:

 $\frac{https://connect.ncdot.gov/resources/Materials/MaterialsResources/Warm\%20Mix\%20Asphalt\%20Approved\%20List.pdf$

Page 6-20, Subarticle 610-3(C), Job Mix Formula (JMF), lines 47-48, replace the last sentence of the third paragraph with the following:

The JMF mix temperature shall be within the ranges shown in Table 610-1 unless otherwise approved.

Page 6-21, Subarticle 610-3(C) Job Mix Formula (JMF), replace Table 610-1 with the following:

| TABLE 610-1 MIXING TEMPERATURE AT THE ASPHALT PLANT | | |
|---|-------------|--|
| Binder Grade JMF Mix Temperature | | |
| PG 58-28; PG 64-22 | 250 - 290°F | |
| PG 70-22 | 275- 305°F | |
| PG 76-22 | 300- 325°F | |

Page 6-21, Subarticle 610-3(C) Job Mix Formula (JMF), lines 1-2, in the first sentence of the first paragraph, delete "and compaction". Lines 4-7, delete the second paragraph and replace with the following:

When RAS is used, the JMF mix temperature shall be established at 275°F or higher.

Page 6-22, Article 610-4, WEATHER, TEMPERATURE AND SEASONAL LIMITATIONS FOR PRODUCING AND PLACING ASPHALT MIXTURES, lines 15-17, replace the second sentence of the first paragraph with the following:

Do not place asphalt material when the air or surface temperatures, measured at the location of the paying operation away from artificial heat, do not meet Table 610-5.

Page 6-23, Article 610-4, WEATHER, TEMPERATURE AND SEASONAL LIMITATIONS FOR PRODUCING AND PLACING ASPHALT MIXTURES, replace Table 610-5 with the following:

| TABLE 610-5 PLACEMENT TEMPERATURES FOR ASPHALT | |
|---|-------------------|
| Asphalt Concrete Mix Type Minimum Surface and Air Temperature | |
| B25.0B, C | 35°F |
| I19.0B, C, D | 35°F |
| SF9.5A, S9.5B | 40°F ^A |
| S9.5C, S12.5C | 45°F ^A |
| S9.5D, S12.5D | 50°F |

A. For the final layer of surface mixes containing recycled asphalt shingles (RAS), the minimum surface and air temperature shall be 50°F.

Page 6-23, Subarticle 610-5(A), General, lines 33-34, replace the last sentence of the third paragraph with the following:

Produce the mixture at the asphalt plant within ± 25 °F of the JMF mix temperature. The temperature of the mixture, when discharged from the mixer, shall not exceed 350°F.

Page 6-26, Article 610-7, HAULING OF ASPHALT MIXTURE, lines 22-23, in the fourth sentence of the first paragraph replace "so as to overlap the top of the truck bed and" with "to". Line 28, in the last paragraph, replace "+15 °F to -25 °F of the specified JMF temperature." with "±25 °F of the specified JMF mix temperature."

Page 6-26, Article 610-8, SPREADING AND FINISHING, line 34, add the following new paragraph:

As referenced in Section 9.6.3 of the *HMA/QMS Manual*, use the automatic screed controls on the paver to control the longitudinal profile. Where approved by the Engineer, the Contractor has the option to use either a fixed or mobile string line.

Page 6-29, Article 610-13, FINAL SURFACE TESTING AND ACCEPTANCE, line 39, add the following after the first sentence in the first paragraph:

Smoothness acceptance testing using the inertial profiler is not required on ramps, loops and turn lanes.

Page 6-30, Subarticle 610-13(A), Option 1 – Inertial Profiler, lines 15-16, replace the fourth sentence of the fourth paragraph with the following:

The interval at which relative profile elevations are reported shall be 2".

Page 6-30, Subarticle 610-13(A), Option 1 – Inertial Profiler, lines 25-28, replace the ninth paragraph with the following:

Operate the profiler at any speed as per the manufacturer's recommendations to collect valid data.

Page 6-30, Subarticle 610-13(A), Option 1 – Inertial Profiler, lines 30-31, delete the third sentence of the tenth paragraph.

Page 6-31, Subarticle 610-13(A), Option 1 – Inertial Profiler, lines 11-13, replace the first sentence of the third paragraph with the following:

After testing, transfer the profile data from the profiler portable computer's hard drive to a write once storage media (Flash drive, USB, DVD-R or CD-R) or electronic media approved by the Engineer.

Page 6-31, Subarticle 610-13(A), Option 1 – Inertial Profiler, lines 17-18, replace the first sentence of the fourth paragraph with the following:

Submit a report with the documentation and electronic data of the evaluation for each section to the Engineer within 10 days after completion of the smoothness testing. The report shall be in the tabular format for each 0.10 segment or a portion thereof with a summary of the MRI values and the localized roughness areas including corresponding project station numbers or acceptable reference points. Calculate the pay adjustments for all segments in accordance with the formulas in Sections (1) and (2) shown below. The Engineer shall review and approval all pay adjustments unless corrective action is required.

Page 6-31, Subarticle 610-13(A)(1), Acceptance for New Construction, lines 36-37, replace the third paragraph with the following:

The price adjustment will apply to each 0.10-mile section or prorated for a portion thereof, based on the Mean Roughness Index (MRI), the average IRI values from both wheel paths.

Page 6-32, Subarticle 610-13(A)(2), Localized Roughness, lines 12-16, replace the first paragraph with the following:

Areas of localized roughness shall be identified through the "Smoothness Assurance Module (SAM)" provided in the ProVAL software. Use the SAM report to optimize repair strategies by analyzing the measurements from profiles collected using inertial profilers. The ride quality threshold for localized roughness shall be 165 in/mile for any sections that are 15 ft. to 100 ft. in length at the continuous short interval of 25 ft. Submit a continuous roughness report to identify each section with project station numbers or reference points outside the threshold and identify all localized roughness, with the signature of the Operator included with the submitted IRI trace and electronic files.

Page 6-32, Subarticle 610-13(A)(2), Localized Roughness, line 21, add the following new paragraph:

If the Engineer does not require corrective action, the pay adjustment for each area of localized roughness shall be based on the following formula:

PA = (165 - LR#) 5

Where:

PA = Pay Adjustment (dollars)

LR# = The Localized Roughness number determined from SAM report for

the ride quality threshold

Page 6-41, Subarticle 650-3(B), Mix Design Criteria, replace Table 650-1 with the following:

| TABLE 650-1 OGAFC GRADATION CRITERIA | | | |
|---|-----------|-----------|--------------------|
| Sieve Size (mm) Type FC-1 Type FC-1 Modified Type FC-2 Modified | | | Type FC-2 Modified |
| 19.0 | - | - | 100 |
| 12.5 | 100 | 100 | 80 - 100 |
| 9.50 | 75 - 100 | 75 - 100 | 55 - 80 |
| 4.75 | 25 - 45 | 25 - 45 | 15 - 30 |
| 2.36 | 5 - 15 | 5 - 15 | 5 - 15 |
| 0.075 | 1.0 - 3.0 | 1.0 - 3.0 | 2.0 - 4.0 |

ASPHALT BINDER CONTENT OF ASPHALT PLANT MIXES:

(11-21-00) (Rev. 7-17-12) 609 SP6 R15

The approximate asphalt binder content of the asphalt concrete plant mixtures used on this project will be as follows:

| Asphalt Concrete Base Course | Type B 25.0 | 4.4% |
|--------------------------------------|--------------|------|
| Asphalt Concrete Intermediate Course | Type I 19.0 | 4.8% |
| Asphalt Concrete Surface Course | Type S 4.75A | 6.8% |
| Asphalt Concrete Surface Course | Type SA-1 | 6.8% |
| Asphalt Concrete Surface Course | Type SF 9.5A | 6.7% |
| Asphalt Concrete Surface Course | Type S 9.5 | 6.0% |
| Asphalt Concrete Surface Course | Type S 12.5 | 5.6% |

The actual asphalt binder content will be established during construction by the Engineer within the limits established in the 2012 Standard Specifications.

ASPHALT PLANT MIXTURES:

(7-1-95) SP6 R20

Place asphalt concrete base course material in trench sections with asphalt pavement spreaders made for the purpose or with other equipment approved by the Engineer.

PRICE ADJUSTMENT - ASPHALT BINDER FOR PLANT MIX:

(11-21-00) 620 SP6 R25

Price adjustments for asphalt binder for plant mix will be made in accordance with Section 620 of the 2012 Standard Specifications.

The base price index for asphalt binder for plant mix is \$ 384.50 per ton.

This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on **May 1, 2017**.

FINAL SURFACE TESTING NOT REQUIRED:

(5-18-04) (Rev. 2-16-16) 61

SP6 R45

Final surface testing is not required on this project in accordance with Section 610-13, *Final Surface Testing and Acceptance*.

GUARDRAIL ANCHOR UNITS, TYPE 350 (TL-3):

(4-20-04) (Rev. 7-21-15)

862

SP08 R065

Description

Furnish and install guardrail anchor units in accordance with the details in the plans, the applicable requirements of Section 862 of the 2012 Standard Specifications, and at locations shown in the plans.

Materials

Furnish guardrail anchor units listed on the NCDOT <u>Approved Products List</u> at https://apps.dot.state.nc.us/vendor/approvedproducts/ or approved equal.

Prior to installation the Contractor shall submit to the Engineer:

- (A) FHWA acceptance letter for each guardrail anchor unit certifying it meets the requirements of NCHRP Report 350, Test Level 3, in accordance with Article 106-2 of the 2012 Standard Specifications.
- (B) Certified working drawings and assembling instructions from the manufacturer for each guardrail anchor unit in accordance with Article 105-2 of the 2012 Standard Specifications.

No modifications shall be made to the guardrail anchor unit without the express written permission from the manufacturer. Perform installation in accordance with the details in the plans, and details and assembling instructions furnished by the manufacturer.

Construction Methods

Guardrail end delineation is required on all approach and trailing end sections for both temporary and permanent installations. Guardrail end delineation consists of yellow reflective sheeting applied to the entire end section of the guardrail in accordance with Article 1088-3 of the 2012 Standard Specifications and is incidental to the cost of the guardrail anchor unit.

Measurement and Payment

Measurement and payment will be made in accordance with Article 862-6 of the 2012 Standard Specifications.

Payment will be made under:

Pay ItemGuardrail Anchor Units, Type 350

Pay Unit Each

IMPACT ATTENUATOR UNITS, TYPE 350:

(4-20-04) (Rev. 7-21-15)

SP08 R075

Description

Furnish and install impact attenuator units and any components necessary to connect the impact attenuator units in accordance with the manufacturer's requirement, the details in the plans and at locations shown in the plans.

Materials

Furnish impact attenuator units listed on the <u>Approved Products List</u> at https://apps.dot.state.nc.us/vendor/approvedproducts/ or approved equal. Prior to installation the Contractor shall submit to the Engineer:

- (A) FHWA acceptance letter for each impact attenuator unit certifying it meets the requirements of NCHRP Report 350, Test Level 3, in accordance with Article 106-2 of the 2012 Standard Specifications.
- (B) Certified working drawings and assembling instructions from the manufacturer for each impact attenuator unit in accordance with Article 105-2 of the 2012 Standard Specifications.

No modifications shall be made to the impact attenuator unit without the express written permission from the manufacturer. Perform installation in accordance with the details in the plans and details and assembling instructions furnished by the manufacturer.

Construction Methods

If the median width is 40 feet or less, the Contractor shall supply NON-GATING Impact Attenuator Units.

If the median width is greater than 40 feet, the Contractor may use GATING or NON-GATING Impact Attenuator Units.

Measurement and Payment

Impact Attenuator Unit, Type 350 will be measured and paid at the contract unit price per each. Such prices and payment will be full compensation for all work covered by this provision including, but not limited to, furnishing, installing and all incidentals necessary to complete the work.

Payment will be made under:

Pay Item
Impact Attenuator Units, Type 350

Pay Unit Each

CHAIN LINK FENCING WITH BARBED WIRE ON EXTENSION ARMS:

(7-1-95) 866 SP8 R100(Revised)

Description

Provide chain link fencing with barbed wire on extension arms in accordance with the plans, Section 866 of the 2012 Standard Specifications, and the provisions herein.

Construction Methods

On all security fencing on this project, place three strands of barbed wire placed at the top of the fence fabric.

Provide extension arms and barbed wire in accordance with the detail in the plans. Space all strands of barbed wire at an approximately equal distance from each other. Make provisions for supporting the top rail. The arm shall be an item of standard manufacture. Have samples of extension arms to be used on the project approved prior to their installation.

Fabricate the extension arms from pressed steel or malleable wrought iron, or either of these materials in conjunction with a cast base. Provide a minimum weight of the arm material of 14 gauge. Provide a complete arm assembly of sufficient strength to support the barbed wire when stretched to proper tension. Galvanize all arms in accordance with ASTM A153.

Splicing of barbed wire between the arms will not be permitted. Use a method of attaching barbed wire to the arms acceptable to the Engineer.

Measurement and Payment

No direct payment will be made for furnishing and installing the barbed wire and extension arms as such work will be considered incidental to other work being paid by the various fencing items in the contract.

STEEL PIPE GATE:

Description

Construct steel pipe gate at locations indicated in the plans, in accordance with the contract documents, the applicable requirements of the *Standard Specifications* and as directed by the Engineer.

Measurement and Payment

24' Steel Pipe Gate will be measured and paid for per each. Such price and payment will be full compensation for all materials, labor and incidentals necessary to satisfactorily complete the work.

FIELD OFFICE (Lump Sum):

(6-1-07)(Rev. 8-18-15)

Description

This work consists of furnishing, erecting, equipping, and maintaining a field office for the exclusive use of Department Engineers and Inspectors at a location on the project approved by the Engineer. Provide a field office that complies with the current ADA Design and Accessibility Standards, the National Electric Code, local, state, and federal regulations, and the following requirements.

Procedures

1

The field office and equipment will remain the property of the Contractor upon completion of the contract. The field office shall be separated from buildings and trailers used by the Contractor and shall be erected and functional as an initial operation. Failure to have the field office functional when work first begins on the project will result in withholding payment of the Contractor's monthly progress estimate. The field office shall be operational throughout the duration of the project and shall be removed upon completion and final acceptance of the project.

Provide a field office that is weatherproof, tightly floored and roofed, constructed with an air space above the ceiling for ventilation, supported above the ground, has a width of at least 10 feet, and the floor-to-ceiling height that is at least 7 feet 6 inches. Provide inside walls and a ceiling constructed of plywood, fiber board, gypsum board, or other suitable materials. Have the exterior walls, ceiling, and floor insulated.

Provide a field office with at least 500 square feet of floor space and that is equipped with the following:

<u>Num</u>ber Item Double-pedestal desk (approximately 60 by 34 inches, at least 2,000 square inches). 1 Plan and drafting table (approximately 30 by 96 inches) with adjustable stool. 1 Computer table at least 48 by 30 by 29 inches. 1 Plan rack for 24 by 36 inch drawings with 6 plan clamps. 1 1 Printing calculator. 2 2-drawer fire protection file, 15 inch drawer width, minimum UL rating of Class 350. 6 Office chairs with at least two chairs having casters. Wastebaskets. 2 Pencil sharpener. 1 Copy machine (8 inch x 11 inch copies) 1 Telephone. 1 1 Fax Machine. 1 Answering machine.

Internet Connection Service (modem for Wi-Fi).

Windows and Doors

Provide a field office with at least three windows with blinds, each having an area of at least 540 square inches, capable of being easily opened and secured from the inside and having at least two exterior passage doors. Provide doors at least 30 inches in width and 78 inches in height. Provide screens for windows and doors. Equip exterior passage doors with locks, and furnish at least two keys to the Engineer.

Steps

Provide accessibility in compliance with the current ADA Design and Accessibility Standards, and the State Building Code and maintain them free from obstructions.

Storage Facility For Nuclear Gage

Furnish the field office with an outside storage facility for the Department's nuclear gage. The storage facility shall not be located within 10 feet of any other structure including the field office.

Lighting, Heating, and Air Conditioning

The field office shall have satisfactory lighting, electrical outlets, heating equipment, an exhaust fan, and an air conditioner connected to an operational power source. Provide at least one of the light fixtures that is a fluorescent light situated over the plan and drafting table. Furnish electrical current and fuel for heating equipment.

Fire Extinguishers

Furnish and maintain one fire extinguisher for each required exterior passage door. Fire extinguisher may be chemical or dry powder. UL Classification 10-B:C (minimum), suitable for Type A:B:C: fires. Mount and maintain fire extinguishers in accordance with OSHA Safety and Health Standards.

Toilets

Provide a toilet conforming to the requirements of the state and local boards of health or other bodies or courts having jurisdiction in the area. When separate facilities for men and women are not available, place a sign with the words "Rest Room" (with letters at least 1 inch in height) over the doorway, and provide an adequate positive locking system on the inside of the doorway. Maintain responsibility for the water and sewer connections or the installation and connection of a water well and septic tank and drain field. These facilities shall conform to all local and state permits.

Utilities

Except for telephone service, make necessary utility and internet connections, maintain utilities and internet connections, pay internet and utility service fees and bills, and handle final disconnection of internet and utilities. Furnish a telephone in each field office and permit the work necessary to install it.

Storage Facility for Test Equipment

Provide the field office with a storage facility, separate from the office for storage of test equipment, other than the nuclear gage. Provide a facility that has at least 64 square feet of floor space, is weatherproof, tightly floored and roofed, and has a tamper resistant key operated lock.

Miscellaneous Items

The field office shall also include the following:

- 1. A certification that the office is free of asbestos and other hazardous materials.
- 2. A broom, dust pan, mop and bucket, and general cleaning supplies.
- 3. Provide and maintain an all weather parking area for six vehicles, including graveled access to the paved surface.

Measurement and Payment

Payment at the contract lump sum bid price for *Field Office* will be full compensation for all work covered by this provision including but not limited to furnishing, erecting, maintaining, and removing the field office as outlined in this provision.

Installation and service fees for the telephone will be paid for by the Department.

Payment will be made under:

Pay ItemPay UnitField OfficeLump Sum

FOUNDATIONS AND ANCHOR ROD ASSEMBLIES FOR METAL POLES:

(1-17-12) (Rev. 5-19-15) 9, 14, 17 SP9 R05

Description

Foundations for metal poles include foundations for signals, cameras, overhead and dynamic message signs (DMS) and high mount and low level light standards supported by metal poles or upright trusses. Foundations consist of footings with pedestals and drilled piers with or without grade beams or wings. Anchor rod assemblies consist of anchor rods (also called anchor bolts) with nuts and washers on the exposed ends of rods and nuts and a plate or washers on the other ends of rods embedded in the foundation.

Construct concrete foundations with the required resistances and dimensions and install anchor rod assemblies in accordance with the contract and accepted submittals. Construct drilled piers consisting of cast-in-place reinforced concrete cylindrical sections in excavated holes. Provide temporary casings or polymer slurry as needed to stabilize drilled pier excavations. Use a prequalified Drilled Pier Contractor to construct drilled piers for metal poles. Define "excavation" and "hole" as a drilled pier excavation and "pier" as a drilled pier.

This provision does not apply to materials and anchor rod assemblies for standard foundations for low level light standards. See Section 1405 of the 2012 Standard Specifications and Standard Drawing No. 1405.01 of the 2012 Roadway Standard Drawings for materials and anchor rod assemblies for standard foundations. For construction of standard foundations for low level light standards, standard foundations are considered footings in this provision.

This provision does not apply to foundations for signal pedestals; see Section 1743 of the 2012 Standard Specifications and Standard Drawing No. 1743.01 of the 2012 Roadway Standard Drawings.

Materials

Refer to the 2012 Standard Specifications.

| Item | Section |
|--------------------------|----------|
| Conduit | 1091-3 |
| Grout, Type 2 | 1003 |
| Polymer Slurry | 411-2(B) |
| Portland Cement Concrete | 1000 |
| Reinforcing Steel | 1070 |
| Rollers and Chairs | 411-2(C) |
| Temporary Casings | 411-2(A) |

Provide Type 3 material certifications in accordance with Article 106-3 of the 2012 Standard Specifications for conduit, rollers, chairs and anchor rod assemblies. Store steel materials on blocking at least 12" above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials. Load, transport, unload and store foundation and anchor rod assembly materials so materials are kept clean and free of damage. Bent, damaged or defective materials will be rejected.

Use conduit type in accordance with the contract. Use Class A concrete for footings and pedestals, Class Drilled Pier concrete for drilled piers and Class AA concrete for grade beams and wings including portions of drilled piers above bottom of wings elevations. Corrugated temporary casings may be accepted at the discretion of the Engineer. A list of approved polymer slurry products is available from:

connect.ncdot.gov/resources/Geological/Pages/Products.aspx

Provide anchor rod assemblies in accordance with the contract consisting of the following:

- (A) Straight anchor rods,
- (B) Heavy hex top and leveling nuts and flat washers on exposed ends of rods, and
- (C) Nuts and either flat plates or washers on the other ends of anchor rods embedded in foundations.

Do not use lock washers. Use steel anchor rods, nuts and washers that meet ASTM F1554 for Grade 55 rods and Grade A nuts. Use steel plates and washers embedded in concrete with a thickness of at least 1/4". Galvanize anchor rods and exposed nuts and washers in accordance with Article 1076-4 of the 2012 Standard Specifications. It is not necessary to galvanize nuts, plates and washers embedded in concrete.

Construction Methods

Install the required size and number of conduits in foundations in accordance with the plans and accepted submittals. Construct top of piers, footings, pedestals, grade beams and wings flat, level and within 1" of elevations shown in the plans or approved by the Engineer. Provide an Ordinary Surface finish in accordance with Subarticle 825-6(B) of the 2012 Standard Specifications for portions of foundations exposed above finished grade. Do not remove anchor bolt templates or pedestal or grade beam forms or erect metal poles or upright trusses onto foundations until concrete attains a compressive strength of at least 3,000 psi.

(A) Drilled Piers

Before starting drilled pier construction, hold a predrill meeting to discuss the installation, monitoring and inspection of the drilled piers. Schedule this meeting after the Drilled Pier Contractor has mobilized to the site. The Resident or Division Traffic Engineer, Contractor and Drilled Pier Contractor Superintendent will attend this predrill meeting.

Do not excavate holes, install piles or allow equipment wheel loads or vibrations within 20 ft of completed piers until 16 hours after Drilled Pier concrete reaches initial set.

Check for correct drilled pier alignment and location before beginning drilling. Check plumbness of holes frequently during drilling.

Construct drilled piers with the minimum required diameters shown in the plans. Install piers with tip elevations no higher than shown in the plans or approved by the Engineer.

Excavate holes with equipment of the sizes required to construct drilled piers. Depending on the subsurface conditions encountered, drilling through rock and boulders may be required. Do not use blasting for drilled pier excavations.

Contain and dispose of drilling spoils and waste concrete as directed and in accordance with Section 802 of the 2012 Standard Specifications. Drilling spoils consist of all materials and fluids removed from excavations.

If unstable, caving or sloughing materials are anticipated or encountered, stabilize holes with temporary casings and/or polymer slurry. Do not use telescoping temporary casings. If it becomes necessary to replace a temporary casing during drilling, backfill the excavation, insert a larger casing around the casing to be replaced or stabilize the excavation with polymer slurry before removing the temporary casing.

If temporary casings become stuck or the Contractor proposes leaving casings in place, temporary casings should be installed against undisturbed material. Unless otherwise approved, do not leave temporary casings in place for mast arm poles and cantilever signs. The Engineer will determine if casings may remain in place. If the Contractor proposes leaving temporary casings in place, do not begin drilling until a casing installation method is approved.

Use polymer slurry and additives to stabilize holes in accordance with the slurry manufacturer's recommendations. Provide mixing water and equipment suitable for polymer slurry. Maintain polymer slurry at all times so slurry meets Table 411-3 of the 2012 Standard Specifications except for sand content.

Define a "sample set" as slurry samples collected from mid-height and within 2 ft of the bottom of holes. Take sample sets from excavations to test polymer slurry immediately after filling holes with slurry, at least every 4 hours thereafter and immediately before placing concrete. Do not place Drilled Pier concrete until both slurry samples from an excavation meet the required polymer slurry properties. If any slurry test results do not meet the requirements, the Engineer may suspend drilling until both samples from a sample set meet the required slurry properties.

Remove soft and loose material from bottom of holes using augers to the satisfaction of the Engineer. Assemble rebar cages and place cages and Drilled Pier concrete in accordance with Subarticle 411-4(E) of the 2012 Standard Specifications except for the following:

- (1) Inspections for tip resistance and bottom cleanliness are not required,
- (2) Temporary casings may remain in place if approved, and
- (3) Concrete placement may be paused near the top of pier elevations for anchor rod assembly installation and conduit placement or
- (4) If applicable, concrete placement may be stopped at bottom of grade beam or wings elevations for grade beam or wing construction.

If wet placement of concrete is anticipated or encountered, do not place Drilled Pier concrete until a concrete placement procedure is approved. If applicable, temporary casings and fluids may be removed when concrete placement is paused or stopped in accordance with the exceptions above provided holes are stable. Remove contaminated concrete from exposed Drilled Pier concrete after removing casings and fluids. If holes are unstable, do not remove temporary casings until a procedure for placing anchor rod assemblies and conduit or constructing grade beams or wings is approved.

Use collars to extend drilled piers above finished grade. Remove collars after Drilled Pier concrete sets and round top edges of piers.

If drilled piers are questionable, pile integrity testing (PIT) and further investigation may be required in accordance with Article 411-5 of the 2012 Standard Specifications. A drilled pier will be considered defective in accordance with Subarticle 411-5(D) of the 2012 Standard Specifications and drilled pier acceptance is based in part on the criteria in Article 411-6 of the 2012 Standard Specifications except for the top of pier tolerances in Subarticle 411-6(C) of the 2012 Standard Specifications.

If a drilled pier is under further investigation, do not grout core holes, backfill around the pier or perform any work on the drilled pier until the Engineer accepts the pier. If the drilled pier is accepted, dewater and grout core holes and backfill around the pier with approved material to finished grade. If the Engineer determines a pier is unacceptable, remediation is required in accordance with Article 411-6 of the 2012 Standard Specifications. No extension of completion date or time will be allowed for remediation of unacceptable drilled piers or post repair testing.

Permanently embed a plate in or mark top of piers with the pier diameter and depth, size and number of vertical reinforcing bars and the minimum compressive strength of the concrete mix at 28 days.

(B) Footings, Pedestals, Grade Beams and Wings

Excavate as necessary for footings, grade beams and wings in accordance with the plans, accepted submittals and Section 410 of the 2012 Standard Specifications. If unstable, caving or sloughing materials are anticipated or encountered, shore foundation excavations as needed with an approved method. Notify the Engineer when foundation excavation is complete. Do not place concrete or reinforcing steel until excavation dimensions and foundation material are approved.

Construct cast-in-place reinforced concrete footings, pedestals, grade beams and wings with the dimensions shown in the plans and in accordance with Section 825 of the 2012 Standard Specifications. Use forms to construct portions of pedestals and grade beams protruding above finished grade. Provide a chamfer with a 3/4" horizontal width for pedestal and grade beam edges exposed above finished grade. Backfill and fill in accordance with Article 410-8 of the 2012 Standard Specifications. Proper compaction around footings and wings is critical for foundations to resist uplift and torsion forces. Place concrete against undisturbed soil and do not use forms for standard foundations for low level light standards.

(C) Anchor Rod Assemblies

Size anchor rods for design and the required projection above top of foundations. Determine required anchor rod projections from nut, washer and base plate thicknesses, the protrusion of 3 to 5 anchor rod threads above top nuts after tightening and the distance of one nut thickness between top of foundations and bottom of leveling nuts.

Protect anchor rod threads from damage during storage and installation of anchor rod assemblies. Before placing anchor rods in foundations, turn nuts onto and off rods past leveling nut locations. Turn nuts with the effort of one workman using an ordinary wrench without a cheater bar. Report any thread damage to the Engineer that requires extra effort to turn nuts.

Arrange anchor rods symmetrically about center of base plate locations as shown in the plans. Set anchor rod elevations based on required projections above top of foundations. Securely brace and hold rods in the correct position, orientation and alignment with a steel template. Do not weld to reinforcing steel, temporary casings or anchor rods.

Install top and leveling (bottom) nuts, washers and the base plate for each anchor rod assembly in accordance with the following procedure:

- (1) Turn leveling nuts onto anchor rods to a distance of one nut thickness between the top of foundation and bottom of leveling nuts. Place washers over anchor rods on top of leveling nuts.
- (2) Determine if nuts are level using a flat rigid template on top of washers. If necessary, lower leveling nuts to level the template in all directions or if applicable, lower nuts to tilt the template so the metal pole or upright truss will lean as shown in the plans. If leveling nuts and washers are not in full contact with the template, replace washers with galvanized beveled washers.
- (3) Verify the distance between the foundation and leveling nuts is no more than one nut thickness.
- (4) Place base plate with metal pole or upright truss over anchor rods on top of washers. High mount luminaires may be attached before erecting metal poles but do not attach cables, mast arms or trusses to metal poles or upright trusses at this time.
- (5) Place washers over anchor rods on top of base plate. Lubricate top nut bearing surfaces and exposed anchor rod threads above washers with beeswax, paraffin or other approved lubricant.
- (6) Turn top nuts onto anchor rods. If nuts are not in full contact with washers or washers are not in full contact with the base plate, replace washers with galvanized beveled washers.
- (7) Tighten top nuts to snug-tight with the full effort of one workman using a 12" wrench. Do not tighten any nut all at once. Turn top nuts in increments. Follow a star pattern cycling through each nut at least twice.
- (8) Repeat (7) for leveling nuts.

- (9) Replace washers above and below the base plate with galvanized beveled washers if the slope of any base plate face exceeds 1:20 (5%), any washer is not in firm contact with the base plate or any nut is not in firm contact with a washer. If any washers are replaced, repeat (7) and (8).
- (10) With top and leveling nuts snug-tight, mark each top nut on a corner at the intersection of 2 flats and a corresponding reference mark on the base plate. Mark top nuts and base plate with ink or paint that is not water-soluble. Use the turn-of-nut method for pretensioning. Do not pretension any nut all at once. Turn top nuts in increments for a total turn that meets the following nut rotation requirements:

| NUT ROTATION REQUIREMENTS | | |
|------------------------------------|--------------------|--|
| (Turn-of-Nut Pretensioning Method) | | |
| Anchor Rod Diameter, inch | Requirement | |
| ≤ 1 1/2 | 1/3 turn (2 flats) | |
| > 1 1/2 | 1/6 turn (1 flat) | |

Follow a star pattern cycling through each top nut at least twice.

- (11) Ensure nuts, washers and base plate are in firm contact with each other for each anchor rod. Cables, mast arms and trusses may now be attached to metal poles and upright trusses.
- (12) Between 4 and 14 days after pretensioning top nuts, use a torque wrench calibrated within the last 12 months to check nuts in the presence of the Engineer. Completely erect mast arm poles and cantilever signs and attach any hardware before checking top nuts for these structures. Check that top nuts meet the following torque requirements:

| TORQUE REQUIREMENTS | | | | | |
|---------------------------|--------------------|--|--|--|--|
| Anchor Rod Diameter, inch | Requirement, ft-lb | | | | |
| 7/8 | 180 | | | | |
| 1 | 270 | | | | |
| 1 1/8 | 380 | | | | |
| 1 1/4 | 420 | | | | |
| ≥ 1 1/2 | 600 | | | | |

If necessary, retighten top nuts in the presence of the Engineer with a calibrated torque wrench to within \pm 10 ft-lb of the required torque. Do not overtighten top nuts.

(13) Do not grout under base plate.

Measurement and Payment

Foundations and anchor rod assemblies for metal poles and upright trusses will be measured and paid for elsewhere in the contract.

No payment will be made for temporary casings that remain in drilled pier excavations. No payment will be made for PIT. No payment will be made for further investigation of defective piers. Further investigation of piers that are not defective will be paid as extra work in accordance with Article 104-7 of the 2012 Standard Specifications. No payment will be made for remediation of unacceptable drilled piers or post repair testing.

MATERIALS:

(2-21-12) (Rev. 11-22-16) 1000, 1002, 1005, 1016, 1018, 1024, 1050, 1074, 1078, 1080, 1081, 1086, 1084, 1087, 1092

SP10 R01

Revise the 2012 Standard Specifications as follows:

Page 10-1, Article 1000-1, DESCRIPTION, lines 9-10, replace the last sentence of the first paragraph with the following:

Type IL, IP, IS or IT blended cement may be used instead of Portland cement.

Page 10-1, Article 1000-1, DESCRIPTION, line 14, add the following:

If any change is made to the mix design, submit a new mix design (with the exception of an approved pozzolan source change).

If any major change is made to the mix design, also submit new test results showing the mix design conforms to the criteria. Define a major change to the mix design as:

- (1) A source change in coarse aggregate, fine aggregate or cement.
- (2) A pozzolan class or type change (e.g. Class F fly ash to Class C fly ash).
- (3) A quantitative change in coarse aggregate (applies to an increase or decrease greater than 5%), fine aggregate (applies to an increase or decrease greater than 5%), water (applies to an increase only), cement (applies to a decrease only), or pozzolan (applies to an increase or decrease greater than 5%).

Use materials which do not produce a mottled appearance through rusting or other staining of the finished concrete surface.

Page 10-1, Article 1000-2, MATERIALS, line 16; Page 10-8, Subarticle 1000-7(A), Materials, line 8; and Page 10-18, Article 1002-2, MATERIALS, line 9, add the following to the table of item references:

ItemSectionType IL Blended Cement1024-1

Page 10-1, Subarticle 1000-3(A), Composition and Design, lines 25-27, replace the second paragraph with the following:

Fly ash may be substituted for cement in the mix design up to 30% at a rate of 1.0 lb of fly ash to each pound of cement replaced.

Page 10-2, Subarticle 1000-3(A), Composition and Design, lines 12-21, delete the third paragraph through the sixth paragraph beginning with "If any change is made to the mix design, submit..." through "...(applies to a decrease only)."

Page 10-5, Table 1000-1, REQUIREMENTS FOR CONCRETE, replace with the following:

| TABLE 1000-1 REQUIREMENTS FOR CONCRETE | | | | | | | | | | | |
|---|--|----------------------------|---------------------------|-----------------------------------|---------------------------|---|--------------------------|--------------|--------------|------------------|--------------|
| Class of Concrete | Min. Comp. Strength at 28 days | Maximum Water-Cement Ratio | | | Consistency Max. Slump | | Cement Content | | | | |
| | | Air-Entrained Concrete | | Non Air- Entrained Concrete | | Vibrated | Non- Vibrated | Vibrated | | Non- Vibrated | |
| | | Rounded Aggregate | Angular Aggre- gate | Rounded Aggregate | Angular Aggre- gate | Vib | N Sib | Min. | Max. | Min. | Max. |
| Units | psi | | | | | inch | inch | lb/cy | lb/cy | lb/cy | lb/cy |
| AA | 4,500 | 0.381 | 0.426 | - | - | 3.5 | - | 639 | 715 | - | - |
| AA Slip Form | 4,500 | 0.381 | 0.426 | - | - | 1.5 | - | 639 | 715 | - | - |
| Drilled Pier | 4,500 | - | - | 0.450 | 0.450 | - | 5-7 dry 7-9 wet | - | - | 640 | 800 |
| A | 3,000 | 0.488 | 0.532 | 0.550 | 0.594 | 3.5 | 4 | 564 | - | 602 | - |
| В | 2,500 | 0.488 | 0.567 | 0.559 | 0.630 | 1.5 machine- placed 2.5 hand- placed | 4 | 508 | - | 545 | - |
| Sand Light- weight | 4,500 | - | 0.420 | - | - | 4 | - | 715 | - | - | - |
| Latex Modified | 3,000 7 day | 0.400 | 0.400 | - | - | 6 | - | 658 | - | - | - |
| Flowable Fill excavatable | 150 max. at 56 days | as needed | as needed | as needed | as needed | - | Flow- able | - | - | 40 | 100 |
| Flowable Fill non- excavatable | 125 | as needed | as needed | as needed | as needed | - | Flow- able | - | - | 100 | as needed |
| Pavement | 4,500 design, field 650 flexural, design only | 0.559 | 0.559 | - | - | 1.5 slip form 3.0 hand place | - | 526 | - | - | - |
| Precast | See Table 1077-1 | as needed | as needed | - | - | 6 | as needed | as needed | as needed | as needed | as needed |
| Prestress | per contract | See Table 1078-1 | See Table 1078-1 | - | - | 8 | - | 564 | as needed | - | - |

Page 10-6, Subarticle 1000-4(I), Use of Fly Ash, lines 36-2, replace the first paragraph with the following:

Fly ash may be substituted for cement in the mix design up to 30% at a rate of 1.0 lb of fly ash to each pound of cement replaced. Use Table 1000-1 to determine the maximum allowable water-cementitious material (cement + fly ash) ratio for the classes of concrete listed.

Page 10-7, Table 1000-3, MAXIMUM WATER-CEMENTITIOUS MATERIAL RATIO, delete the table.

Page 10-7, Article 1000-5, HIGH EARLY STRENGTH PORTLAND CEMENT CONCRETE, lines 30-31, delete the second sentence of the third paragraph.

Page 10-19, Article 1002-3, SHOTCRETE FOR TEMPORARY SUPPORT OF EXCAVATIONS, line 30, add the following at the end of Section 1002:

(H) Handling and Storing Test Panels

Notify the Area Materials Engineer when preconstruction or production test panels are made within 24 hours of shooting the panels. Field cure and protect test panels from damage in accordance with ASTM C1140 until the Department transports panels to the Materials and Tests Regional Laboratory for coring.

Page 10-23, Table 1005-1, AGGREGATE GRADATION-COARSE AGGREGATE, replace with the following:

ABC(M) Light-weight^C Std. Size # ABC 467M 14M 78M 57M 9M M_{9} 57 67 4 S <u>С</u>. 100 100 2 For Lightweight Aggregate used in Structural Concrete, see Subarticle 1014-2(E)(6) See Subarticle 1005-4(B). See Subarticle 1005-4(A). 95-100 90-100 1/2" 100 100 100 100 100 75- 100 90-100 95-100 95-100 20-55 75-97 100 100 7 90-100 90-100 20-55 35-70 AGGREGATE GRADATION - COARSE AGGREGATE 0-15 3/4" 100 98-100 20-55 55-80 25-45 0-10 1/2" Percentage of Total by Weight Passing 100 100 100 98-100 75-100 80-100 98-100 20-55 0-20 0-30 3/8'' 0-5 0-5 **TABLE 1005-1** 85-100 20-40 35-55 35-70 20-45 5-40 0-10 0-10 0-5 0-8 #4 0-20 0-5 0-5 0-5 **8*** 0-25 25-45 #10 0-10 0-10 #16 0-8 14-30 #40 $4-12^{B}$ 0-2.5 $0-12^{B}$ #200 \triangleright \triangleright \triangleright \triangleright \triangleright \triangleright \triangleright \triangleright \triangleright \triangleright Asphalt Plant Mix, AST, Structural Concrete, Weep Hole Drains AST, Structural Concrete, Shoulder Drain Stone, Sediment Control Stone Asphalt Plant Mix, AST, Structural Concrete, Weep Maintenance Stabilization Asphalt Plant Mix, AST, Structural Concrete AST, Concrete Pavement Aggregate Base Course, Aggregate Stabilization AST, Sediment Control Asphalt Plant Mix Asphalt Plant Mix Remarks Hole Drains AST AST AST

Page 10-39, Article 1016-3, CLASSIFICATIONS, lines 27-32, replace with the following:

Select material is clean, unweathered durable, blasted rock material obtained from an approved source. While no specific gradation is required, the below criteria will be used to evaluate the materials for visual acceptance by the Engineer:

- (A) At least 50% of the rock has a diameter of from 1.5 ft to 3 ft,
- **(B)** 30% of the rock ranges in size from 2" to 1.5 ft in diameter, and
- (C) Not more than 20% of the rock is less than 2" in diameter. No rippable rock will be permitted.

Page 10-40, Tables 1018-1 and 1018-2, PIEDMONT, WESTERN AND COASTAL AREA CRITERIA FOR ACCEPTANCE OF BORROW MATERIAL, under second column in both tables, replace second row with the following:

Acceptable, but not to be used in the top 3 ft of embankment or backfill

Page 10-46, Article 1024-1, PORTLAND CEMENT, line 33, add the following as the ninth paragraph:

Use Type IL blended cement that meets AASHTO M 240, except that the limestone content is limited to between 5 and 12% by weight and the constituents shall be interground. Class F fly ash can replace a portion of Type IL blended cement and shall be replaced as outlined in Subarticle 1000-4(I) for Portland cement. For mixes that contain cement with alkali content between 0.6% and 1.0% and for mixes that contain a reactive aggregate documented by the Department, use a pozzolan in the amount shown in Table 1024-1.

Page 10-46, Table 1024-1, POZZOLANS FOR USE IN PORTLAND CEMENT CONCRETE, replace with the following:

| TABLE 1024-1 POZZOLANS FOR USE IN PORTLAND CEMENT CONCRETE | | | | |
|---|---|--|--|--|
| Pozzolan | Rate | | | |
| Class F Fly Ash | 20% - 30% by weight of required cement content | | | |
| | with 1.0 lb Class F fly ash per lb of cement replaced | | | |
| Ground Granulated Blast | 35%-50% by weight of required cement content | | | |
| Furnace Slag | with 1.0 lb slag per lb of cement replaced | | | |
| Microsilica | 4%-8% by weight of required cement content | | | |
| | with 1.0 lb microsilica per lb of cement replaced | | | |

Page 10-47, Subarticle 1024-3(B), Approved Sources, lines 16-18, replace the second sentence of the second paragraph with the following:

Tests shall be performed by AASHTO's designated National Transportation Product Evaluation Program (NTPEP) laboratory for concrete admixture testing.

Page 10-65, Article 1050-1, GENERAL, line 41, replace the first sentence with the following:

All fencing material and accessories shall meet Section 106.

Page 10-115, Subarticle 1074-7(B), Gray Iron Castings, lines 10-11, replace the first two sentences with the following:

Supply gray iron castings meeting all facets of AASHTO M 306 excluding proof load. Proof load testing will only be required for new casting designs during the design process, and conformance to M306 loading (40,000 lb.) will be required only when noted on the design documents.

Page 10-126, Table 1078-1, REQUIREMENTS FOR CONCRETE, replace with the following:

| TABLE 1078-1 REQUIREMENTS FOR CONCRETE | | | | | |
|---|---|---|--|--|--|
| Property | 28 Day Design Compressive Strength 6,000 psi or less | 28 Day Design Compressive Strength greater than 6,000 psi | | | |
| Maximum Water/Cementitious Material Ratio | 0.45 | 0.40 | | | |
| Maximum Slump without HRWR | 3.5" | 3.5" | | | |
| Maximum Slump with HRWR | 8" | 8" | | | |
| Air Content (upon discharge into forms) | 5 + 2% | 5 + 2% | | | |

Page 10-151, Article 1080-4, INSPECTION AND SAMPLING, lines 18-22, replace (B), (C) and (D) with the following:

- (B) At least 3 panels prepared as specified in 5.5.10 of AASHTO M 300, Bullet Hole Immersion Test.
- (C) At least 3 panels of 4"x6"x1/4" for the Elcometer Adhesion Pull Off Test, ASTM D4541.
- (D) A certified test report from an approved independent testing laboratory for the Salt Fog Resistance Test, Cyclic Weathering Resistance Test, and Bullet Hole Immersion Test as specified in AASHTO M 300.
- (E) A certified test report from an approved independent testing laboratory that the product has been tested for slip coefficient and meets AASHTO M253, Class B.

Page 10-161, Subarticle 1081-1(A), Classifications, lines 29-33, delete first 3 sentences of the description for Type 2 and replace with the following:

Type 2 - A low-modulus, general-purpose adhesive used in epoxy mortar repairs. It may be used to patch spalled, cracked or broken concrete where vibration, shock or expansion and contraction are expected.

Page 10-162, Subarticle 1081-1(A), Classifications, lines 4-7, delete the second and third sentences of the description for Type 3A. Lines 16-22, delete Types 6A, 6B and 6C.

Page 10-162, Subarticle 1081-1(B), Requirements, lines 26-30, replace the second paragraph with the following:

For epoxy resin systems used for embedding dowel bars, threaded rods, rebar, anchor bolts and other fixtures in hardened concrete, the manufacturer shall submit test results showing that the bonding system will obtain 125% of the specified required yield strength of the fixture. Furnish certification that, for the particular bolt grade, diameter and embedment depth required, the anchor system will not fail by adhesive failure and that there is no movement of the anchor bolt. For certification and anchorage, use 3,000 psi as the minimum Portland cement concrete compressive strength used in this test. Use adhesives that meet Section 1081.

List the properties of the adhesive on the container and include density, minimum and maximum temperature application, setting time, shelf life, pot life, shear strength and compressive strength.

Page 10-163, Table 1081-1, PROPERTIES OF MIXED EPOXY RESIN SYSTEMS, replace with the following:

| Property Viscosity-Poises at 77°F ± 2°F Spindle No. | Type 1 Gel | Type 2 10-30 | Type 3 25-75 | Type 3A Gel | Type 40-150 | Type 4B 40-150 | 1-6 |
|---|-----------------|--------------|--------------|-------------------|--------------------|-----------------------|-------|
| , | | | | | | | |
| Speed (RPM) | ı | 20 | 20 | ı | 10 | 10 | 50 |
| Pot Life (Minutes) | 20-50 | 30-60 | 20-50 | 5-50 | 40-80 | 40-80 | 20-60 |
| Minimum Tensile Strength at 7 days (psi) | 1,500 | 2,000 | 4,000 | 4,000 | 1,500 | 1,500 | 4,000 |
| Tensile Elongation at 7 days (%) | 30 min. | 30 min. | 2-5 | 2-5 | 5-15 | 5-15 | 2-5 |
| Min. Compressive Strength of 2". mortar cubes at 24 hours | 3,000 (Neat) | 4,000- | 6,000- | 6,000 (Neat) | 3,000 | 3,000 | 6,000 |
| Min. Compressive Strength of 2" mortar cubes at 7 days | 5,000 (Neat) | ı | ı | ı | ı | 5,000 | ı |
| Maximum Water Absorption (%) | 1.5 | 1.0 | 1.0 | 1.5 | 1.0 | 1.0 | 1.0 |
| Min. Bond Strength Slant Shear Test at 14 days (psi) | 1,500 | 1,500 | 2,000 | 2,000 | 1,500 | 1,500 | 1,500 |

Page 10-164, Subarticle 1081-1(E), Prequalification, lines 31-33, replace the second sentence of the first paragraph with the following:

Manufacturers choosing to supply material for Department jobs must submit an application through the Value Management Unit with the following information for each type and brand name:

Page 10-164, Subarticle 1081-1(E)(3), line 37, replace with the following:

(3) Type of the material in accordance with Articles 1081-1 and 1081-4,

Page 10-165, Subarticle 1081-1(E)(6), line 1, in the first sentence of the first paragraph replace "AASHTO M 237" with "the specifications".

Page 10-165, Subarticle 1081-1(E), Prequalification, line 9-10, delete the second sentence of the last paragraph.

Page 10-165, Subarticle 1081-1(F), Acceptance, line 14, in the first sentence of the first paragraph replace "Type 1" with "Type 3".

Page 10-169, Subarticle 1081-3(G), Anchor Bolt Adhesives, delete this subarticle.

Page 10-170, Article 1081-3, HOT BITUMEN, line 9, add the following at the end of Section 1081:

1081-4 EPOXY RESIN ADHESIVE FOR BONDING TRAFFIC MARKINGS

(A) General

This section covers epoxy resin adhesive for bonding traffic markers to pavement surfaces.

(B) Classification

The types of epoxies and their uses are as shown below:

Type I – Rapid Setting, High Viscosity, Epoxy Adhesive. This type of adhesive provides rapid adherence to traffic markers to the surface of pavement.

Type II – Standard Setting, High Viscosity, Epoxy Adhesive. This type of adhesive is recommended for adherence of traffic markers to pavement surfaces when rapid set is not required.

Type III – Rapid Setting, Low Viscosity, Water Resistant, Epoxy Adhesive. This type of rapid setting adhesive, due to its low viscosity, is appropriate only for use with embedded traffic markers.

Type IV – Standard Set Epoxy for Blade Deflecting-Type Plowable Markers.

(C) Requirements

Epoxies shall conform to the requirements set forth in AASHTO M 237.

(D) Prequalification

Refer to Subarticle 1081-1(E).

(E) Acceptance

Refer to Subarticle 1081-1(F).

Page 10-173, Article 1084-2, STEEL SHEET PILES, lines 37-38, replace first paragraph with the following:

Steel sheet piles detailed for permanent applications shall be hot rolled and meet ASTM A572 or ASTM A690 unless otherwise required by the plans. Steel sheet piles shall be coated as required by the plans. Galvanized sheet piles shall be coated in accordance with Section 1076. Metallized sheet piles shall be metallized in accordance to the Project Special Provision "Thermal Sprayed Coatings (Metallization)" with an 8 mil, 99.9% aluminum alloy coating and a 0.5 mil seal coating. Any portion of the metallized sheet piling encased in concrete shall receive a barrier coat. The barrier coat shall be an approved waterborne coating with a low-

viscosity which readily absorbs into the pores of the aluminum thermal sprayed coating. The waterborne coating shall be applied at a spreading rate that results in a theoretical 1.5 mil dry film thickness. The manufacturer shall issue a letter of certification that the resin chemistry of the waterborne coating is compatible with the 99.9% aluminum thermal sprayed alloy and suitable for tidal water applications.

Page 10-174, Subarticle 1086-1(B)(1), Epoxy, lines 18-24, replace with the following:

The epoxy shall meet Article 1081-4.

The 2 types of epoxy adhesive which may be used are Type I, Rapid Setting, and Type II, Standard Setting. Use Type II when the pavement temperature is above 60°F or per the manufacturer's recommendations whichever is more stringent. Use Type I when the pavement temperature is between 50°F and 60°F or per the manufacturer's recommendations whichever is more stringent. Epoxy adhesive Type I, Cold Set, may be used to attach temporary pavement markers to the pavement surface when the pavement temperature is between 32°F and 50°F or per the manufacturer's recommendations whichever is more stringent.

Page 10-175, Subarticle 1086-2(E), Epoxy Adhesives, line 27, replace "Section 1081" with "Article 1081-4".

Page 10-177, Subarticle 1086-3(E), Epoxy Adhesives, line 22, replace "Section 1081" with "Article 1081-4".

Page 10-179, Subarticle 1087-4(A), Composition, lines 39-41, replace the third paragraph with the following:

All intermixed and drop-on glass beads shall not contain more than 75 ppm arsenic or 200 ppm

Page 10-180, Subarticle 1087-4(B), Physical Characteristics, line 8, replace the second paragraph with the following:

All intermixed and drop-on glass beads shall comply with NCGS § 136-30.2 and 23 USC § 109(r).

Page 10-181, Subarticle 1087-7(A), Intermixed and Drop-on Glass Beads, line 24, add the following after the first paragraph:

Use X-ray Fluorescence for the normal sampling procedure for intermixed and drop-on beads, without crushing, to check for any levels of arsenic and lead. If any arsenic or lead is detected, the sample shall be crushed and repeat the test using X-ray Fluorescence. If the X-ray Fluorescence test shows more than a LOD of 5 ppm, test the beads using United States Environmental Protection Agency Method 6010B, 6010C or 3052 for no more than 75 ppm arsenic or 200 ppm lead.

SELECT MATERIAL, CLASS III, TYPE 3:
1016, 1044

SP10 R05

Revise the 2012 Standard Specifications as follows:

Page 10-39, Article 1016-3, CLASS III, add the following after line 14:

Type 3 Select Material

Type 3 select material is a natural or manufactured fine aggregate material meeting the following gradation requirements and as described in Sections 1005 and 1006:

| | | Percent | tage of Total | by Weight | Passing | | |
|------|--------|---------|---------------|-----------|---------|------|------|
| 3/8" | #4 | #8 | #16 | #30 | #50 | #100 | #200 |
| 100 | 95-100 | 65-100 | 35-95 | 15-75 | 5-35 | 0-25 | 0-8 |

Page 10-39, Article 1016-3, CLASS III, line 15, replace "either type" with "Type 1, Type 2 or Type 3".

Page 10-62, Article 1044-1, line 36, delete the sentence and replace with the following:

Subdrain fine aggregate shall meet Class III select material, Type 1 or Type 3.

Page 10-63, Article 1044-2, line 2, delete the sentence and replace with the following:

Subdrain coarse aggregate shall meet Class V select material.

SHOULDER AND SLOPE BORROW:

(3-19-13) 1019 SP10 R10

Use soil in accordance with Section 1019 of the 2012 Standard Specifications. Use soil consisting of loose, friable, sandy material with a PI greater than 6 and less than 25 and a pH ranging from 5.5 to 7.0.

Soil with a pH ranging from 4.0 to 5.5 will be accepted without further testing if additional limestone is provided in accordance with the application rates shown in Table 1019-1A. Soil type is identified during the soil analysis. Soils with a pH above 7.0 require acidic amendments to be added. Submit proposed acidic amendments to the Engineer for review and approval. Soils with a pH below 4.0 or that do not meet the PI requirements shall not be used.

| pH TEST RESULT | Sandy Soils Additional Rate (lbs. / Acre) | Silt Loam Soils Additional Rate (lbs. / Acre) | Clay Loam Soils Additional Rate (lbs. / Acre) |
|-------------------|---|---|---|
| 4.0 - 4.4 | 1,000 | 4,000 | 6,000 |
| 4.5 - 4.9 | 500 | 3,000 | 5,000 |
| 5.0 - 5.4 | NA | 2,000 | 4,000 |

Note: Limestone application rates shown in this table are in addition to the standard rate of 4000 lbs. / acre required for seeding and mulching.

No direct payment will be made for providing additional lime or acidic amendments for Ph adjustment.

GROUT PRODUCTION AND DELIVERY:

(3-17-15) 1003 SP10 R20

Revise the 2012 Standard Specifications as follows:

Replace Section 1003 with the following:

SECTION 1003 GROUT PRODUCTION AND DELIVERY

1003-1 DESCRIPTION

This section addresses cement grout to be used for structures, foundations, retaining walls, concrete barriers, embankments, pavements and other applications in accordance with the contract. Produce non-metallic grout composed of Portland cement and water and at the Contractor's option or as required, aggregate and pozzolans. Include chemical admixtures as required or needed. Provide sand cement or neat cement grout as required. Define "sand cement grout" as grout with only fine aggregate and "neat cement grout" as grout without aggregate.

The types of grout with their typical uses are as shown below:

- **Type 1** A cement grout with only a 3-day strength requirement and a fluid consistency that is typically used for filling subsurface voids.
- **Type 2** A nonshrink grout with strength, height change and flow conforming to ASTM C1107 that is typically used for foundations, ground anchors and soil nails.
- **Type 3** A nonshrink grout with high early strength and freeze-thaw durability requirements that is typically used in pile blockouts, grout pockets, shear keys, dowel holes and recesses for concrete barriers and structures.
- **Type 4** A neat cement grout with low strength, a fluid consistency and high fly ash content that is typically used for slab jacking.
- **Type 5** A low slump, low mobility sand cement grout with minimal strength that is typically used for compaction grouting.

1003-2 MATERIALS

Refer to Division 10.

| Item | Section |
|--------------------------------------|---------|
| Chemical Admixtures | 1024-3 |
| Fine Aggregate | 1014-1 |
| Fly Ash | 1024-5 |
| Ground Granulated Blast Furnace Slag | 1024-6 |
| Portland Cement | 1024-1 |
| Silica Fume | 1024-7 |
| Water | 1024-4 |

Do not use grout that contains soluble chlorides or more than 1% soluble sulfate. At the Contractor's option, use an approved packaged grout instead of the materials above except for water. Use packaged grouts that are on the NCDOT Approved Products List.

Use admixtures for grout that are on the NCDOT Approved Products List or other admixtures in accordance with Subarticle 1024-3(E) except do not use concrete additives or unclassified or other admixtures in Type 4 or 5 grout. Use Class F fly ash for Type 4 grout and Type II Portland cement for Type 5 grout.

Use well graded rounded aggregate with a gradation, liquid limit (LL) and plasticity index (PI) that meet Table 1003-1 for Type 5 grout. Fly ash may be substituted for a portion of the fines in the aggregate. Do not use any other pozzolans in Type 5 grout.

| AGGREG | TABLE 1003- ATE REQUIREMENTS | | DUT |
|-----------------------------------|----------------------------------|--------------|------------------|
| Grad | ation | Maximum | Maximum |
| Sieve Designation per AASHTO M 92 | Percentage Passing (% by weight) | Liquid Limit | Plasticity Index |
| 3/8" | 100 | | |
| No. 4 | 70 – 95 | | |
| No. 8 | 50 – 90 | | |
| No. 16 | 30 - 80 | N/A | N/A |
| No. 30 | 25 - 70 | | |
| No. 50 | 20 - 50 | | |
| No. 100 | 15 – 40 | - | |
| No. 200 | 10 – 30 | 25 | 10 |

1003-3 COMPOSITION AND DESIGN

When using an approved packaged grout, a grout mix design submittal is not required. Otherwise, submit proposed grout mix designs for each grout mix to be used in the work. Mixes for all grout shall be designed by a Certified Concrete Mix Design Technician or an Engineer licensed by the State of North Carolina. Mix proportions shall be determined by a testing laboratory approved by the Department. Base grout mix designs on laboratory trial batches that meet Table 1003-2 and this section. With permission, the Contractor may use a quantity of chemical admixture within the range shown on the current list of approved admixtures maintained by the Materials and Tests Unit.

Submit grout mix designs in terms of saturated surface dry weights on Materials and Tests Form 312U at least 35 days before proposed use. Adjust batch proportions to compensate for surface moisture contained in the aggregates at the time of batching. Changes in the saturated surface dry mix proportions will not be permitted unless revised grout mix designs have been submitted to the Engineer and approved.

Accompany Materials and Tests Form 312U with a listing of laboratory test results of compressive strength, density and flow or slump and if applicable, aggregate gradation, durability and height change. List the compressive strength of at least three 2" cubes at the age of 3 and 28 days.

The Engineer will review the grout mix design for compliance with the contract and notify the Contractor as to its acceptability. Do not use a grout mix until written notice has been received. Acceptance of the grout mix design or use of approved packaged grouts does not relieve the Contractor of his responsibility to furnish a product that meets the contract. Upon written request from the Contractor, a grout mix design accepted and used satisfactorily on any Department project may be accepted for use on other projects.

Perform laboratory tests in accordance with the following test procedures:

| Property | Test Method |
|----------------------------------|---|
| Aggregate Gradation ^A | AASHTO T 27 |
| Compressive Strength | AASHTO T 106 |
| | AASHTO T 121, |
| Density (Unit Weight) | AASHTO T 133 ^B , |
| Density (Onit Weight) | ANSI/API RP ^C 13B-1 ^B (Section 4, Mud |
| | Balance) |
| Durability | AASHTO T 161 ^D |
| Flow | ASTM C939 (Flow Cone) |
| Height Change | ASTM C1090 ^E |
| Slump | AASHTO T 119 |

- **A.** Applicable to grout with aggregate.
- **B.** Applicable to Neat Cement Grout.
- C. American National Standards Institute/American Petroleum Institute Recommended Practice.
- **D.** Procedure A (Rapid Freezing and Thawing in Water) required.
- **E.** Moist room storage required.

1003-4 GROUT REQUIREMENTS

Provide grout types in accordance with the contract. Use grouts with properties that meet Table 1003-2. The compressive strength of the grout will be considered the average compressive strength test results of three 2" cubes at each age. Make cubes that meet AASHTO T 106 from the grout delivered for the work or mixed on-site. Make cubes at such frequencies as the Engineer may determine and cure them in accordance with AASHTO T 106.

| | | | ABLE 1003-2 REQUIREN | | |
|------------------|---------------------------------|----------------------|-------------------------|--|---------------------------------|
| Type of Grout | Minimum Compressive Strength at | | Height Change | Flow ^A /Slump ^B | Minimum Durability Factor |
| | 3 days | 28 days | at 28 days | | ractor |
| 1 | 3,000 psi – | | _ | 10 - 30 sec | _ |
| 2 | | Table 1 ^C | | Fluid Consistency ^C | _ |
| 3 | 5,000 psi | _ | 0 – 0.2% | Per Accepted Grout Mix Design/ Approved Packaged Grout | 80 |
| 4 ^D | 600 psi | 1,500 psi | _ | 10 - 26 sec | _ |
| 5 | _ | 500 psi | _ | 1 – 3" | _ |

- **A.** Applicable to Type 1 through 4 grouts.
- **B.** Applicable to Type 5 grout.
- C. ASTM C1107.
- **D.** Use Type 4 grout with proportions by volume of 1 part cement and 3 parts fly ash.

1003-5 TEMPERATURE REQUIREMENTS

When using an approved packaged grout, follow the manufacturer's instructions for grout and air temperature at the time of placement. Otherwise, the grout temperature at the time of placement shall be not less than $50^{\circ}F$ nor more than $90^{\circ}F$. Do not place grout when the air temperature measured at the location of the grouting operation in the shade away from artificial heat is below $40^{\circ}F$.

1003-6 ELAPSED TIME FOR PLACING GROUT

Agitate grout continuously before placement. Regulate the delivery so the maximum interval between the placing of batches at the work site does not exceed 20 minutes. Place grout before exceeding the times in Table 1003-3. Measure the elapsed time as the time between adding the mixing water to the grout mix and placing the grout.

| | TABLE 1003-3 ED TIME FOR PLACING (with continuous agitatio | |
|---|--|--------------------------------|
| | Maximum | Elapsed Time |
| Air or Grout Temperature, Whichever is Higher | No Retarding Admixture Used | Retarding Admixture Used |
| 90°F or above | 30 minutes | 1 hr. 15 minutes |
| 80°F through 89°F | 45 minutes | 1 hr. 30 minutes |
| 79°F or below | 60 minutes | 1 hr. 45 minutes |

1003-7 MIXING AND DELIVERY

Use grout free of any lumps and undispersed cement. When using an approved packaged grout, mix grout in accordance with the manufacturer's instructions. Otherwise, comply with Articles 1000-8 through 1000-12 to the extent applicable for grout instead of concrete.

GEOSYNTHETICS:

(2-16-16) 1056 SP10 R25

Revise the 2012 Standard Specifications as follows:

Replace Section 1056 with the following:

SECTION 1056 GEOSYNTHETICS

1056-1 DESCRIPTION

Provide geosynthetics for subsurface drainage, separation, stabilization, reinforcement, erosion control, filtration and other applications in accordance with the contract. Use geotextiles, geocomposite drains and geocells that are on the NCDOT Approved Products List. Prefabricated geocomposite drains include sheet, strip and vertical drains (PVDs), i.e., "wick drains" consisting of a geotextile attached to and/or encapsulating a plastic drainage core. Geocells are comprised of ultrasonically welded polymer strips that when expanded form a 3D honeycomb grid that is typically filled with material to support vegetation.

If necessary or required, hold geotextiles and sheet drains in place with new wire staples, i.e., "sod staples" that meet Subarticle 1060-8(D) or new anchor pins. Use steel anchor pins with a diameter of at least 3/16" and a length of at least 18" and with a point at one end and a head at the other end that will retain a steel washer with an outside diameter of at least 1.5".

1056-2 HANDLING AND STORING

Load, transport, unload and store geosynthetics so geosynthetics are kept clean and free of damage. Label, ship and store geosynthetics in accordance with Section 7 of AASHTO M 288. Geosynthetics with defects, flaws, deterioration or damage will be rejected. Do not unwrap geosynthetics until just before installation. Do not leave geosynthetics exposed for more than 7 days before covering except for geosynthetics for temporary wall faces and erosion control.

1056-3 CERTIFICATIONS

Provide Type 1, Type 2 or Type 4 material certifications in accordance with Article 106-3 for geosynthetics. Define "minimum average roll value" (MARV) in accordance with ASTM D4439. Provide certifications with MARV for geosynthetic properties as required. Test geosynthetics using laboratories accredited by the Geosynthetic Accreditation Institute (GAI) to perform the required test methods. Sample geosynthetics in accordance with ASTM D4354.

1056-4 GEOTEXTILES

When required, sew geotextiles together in accordance with Article X1.1.4 of AASHTO M 288. Provide sewn seams with seam strengths meeting the required strengths for the geotextile type and class specified.

Provide geotextile types and classes in accordance with the contract. Geotextiles will be identified by the product name printed directly on the geotextile. When geotextiles are not marked with a product name or marked with only a manufacturing plant identification code, geotextiles will be identified by product labels attached to the geotextile wrapping. When identification is based on labels instead of markings, unwrap geotextiles just before use in the presence of the Engineer to confirm that the product labels on both ends of the outside of the geotextile outer wrapping match the labels affixed to both ends of the inside of the geotextile roll core. Partial geotextile rolls without the product name printed on the geotextile or product labels affixed to the geotextile roll core may not be used.

Use woven or nonwoven geotextiles with properties that meet Table 1056-1. Define "machine direction" (MD) and "cross-machine direction" (CD) in accordance with ASTM D4439.

| TABLE 1056-1 GEOTEXTILE REQUIREMENTS | | | | | | |
|---|-----------------------------------|-----------------------------------|----------------------|-----------------------------------|--|---------------|
| Duananty | | | Require | nent | | |
| Property | Type 1 | Type 2 | Type 3 ^A | Type 4 | Type 5 ^B | Test |
| Typical | Shoulder | Under | Silt Fence | Soil | Temporary | Method |
| Application | Drains | Rip Rap | Fabric | Stabilization | Walls | |
| Elongation (MD & CD) | ≥ 50% | ≥ 50% | ≤ 25% | < 50% | < 50% | ASTM D4632 |
| Grab Strength (MD & CD) | | | 100 lb ^C | | | ASTM D4632 |
| Tear Strength (MD & CD) | Table 1 ^D , Class 3 | Table 1 ^D , Class 1 | _ | Table 1 ^D , Class 3 | - | ASTM D4533 |
| Puncture Strength | | | _ | | | ASTM D6241 |
| Ultimate Tensile Strength (MD & CD) | _ | _ | _ | _ | 2,400 lb/ft ^C (unless required otherwise in the contract) | ASTM D4595 |
| Permittivity | Table 2 ^D , | Table 6 ^D , | | | 0.20 sec ^{-1,C} | ASTM D4491 |
| Apparent Opening Size | 15% to 50% <i>in Situ</i> Soil | 15% to 50% <i>in Situ</i> Soil | Table 7 ^D | Table 5 ^D | 0.60 mm ^E | ASTM D4751 |
| UV Stability (Retained Strength) | Passing 0.075 mm | Passing 0.075mm | | | 70% ^C (after 500 hr of exposure) | ASTM D4355 |

- **A.** Minimum roll width of 36" required.
- **B.** Minimum roll width of 13 ft required.
- C. MARV per Article 1056-3.
- **D.** AASHTO M 288.
- **E.** Maximum average roll value.

1056-5 GEOCOMPOSITE DRAINS

Provide geocomposite drain types in accordance with the contract and with properties that meet Table 1056-2.

| | TAB GEOCOMPOSITE I | LE 1056-2 DRAIN REQUIRE | MENTS | |
|------------|---|----------------------------|------------|--------|
| Duramanter | | Requirement | | Test |
| Property | Sheet Drain | Strip Drain | Wick Drain | Method |
| Width | ≥ 12" (unless required otherwise in the contract) | 12" ±1/4" | 4" ±1/4" | N/A |

| In-Plane Flow Rate ^A | 6 gpm/ft | 15 gpm/ft | 1.5 gpm ^B | |
|---------------------------------|------------------|--------------------|----------------------|-------|
| (with gradient of 1.0 | @ applied normal | @ applied normal | @ applied normal | ASTM |
| and 24-hour seating | compressive | compressive | compressive | D4716 |
| period) | stress of 10 psi | stress of 7.26 psi | stress of 40 psi | |

- **A.** MARV per Article 1056-3.
- **B.** Per 4" drain width.

For sheet and strip drains, use accessories (e.g., pipe outlets, connectors, fittings, etc.) recommended by the Drain Manufacturer. Provide sheet and strip drains with Type 1 geotextiles heat bonded or glued to HDPE, polypropylene or high impact polystyrene drainage cores that meet Table 1056-3.

| I | TABLI DRAINAGE CORI | E 1056-3 E REQUIREMEN | TS |
|----------------------|------------------------|--------------------------|---------------------|
| Duomontes | Requireme | nt (MARV) | Test Method |
| Property | Sheet Drain | Strip Drain | |
| Thickness | 1/4" | 1" | ASTM D1777 or D5199 |
| Compressive Strength | 40 psi | 30 psi | ASTM D6364 |

For wick drains with a geotextile wrapped around a corrugated drainage core and seamed to itself, use drainage cores with an ultimate tensile strength of at least 225 lb per 4" width in accordance with ASTM D4595 and geotextiles with properties that meet Table 1056-4.

| TABLE 1056-4 WICK DRAIN GEOTEXTILE REQUIREMENTS | | | | | |
|---|--------------------------------|--------------|--|--|--|
| Property Requirement Test Method | | | | | |
| Elongation | ≥ 50% | ASTM D4632 | | | |
| Grab Strength | Table 1 ^A , Class 3 | ASTM D4632 | | | |
| Tear Strength | | ASTM D4533 | | | |
| Puncture Strength | Class 5 | ASTM D6241 | | | |
| Permittivity | 0.7 sec ^{-1,B} | ASTM D4491 | | | |
| Apparent Opening Size (AOS) | Table 2 ^A , | ASTM D4751 | | | |
| UV Stability | > 50% in Situ Soil | ASTM D4355 | | | |
| (Retained Strength) | Passing 0.075 mm | AST WI D4555 | | | |

- **A.** AASHTO M 288.
- **B.** MARV per Article 1056-3.

For wick drains with a geotextile fused to both faces of a corrugated drainage core along the peaks of the corrugations, use wick drains with an ultimate tensile strength of at least 1,650 lb/ft in accordance with ASTM D4595 and geotextiles with a permittivity, AOS and UV stability that meet Table 1056-4.

1056-6 GEOCELLS

Geocells will be identified by product labels attached to the geocell wrapping. Unwrap geocells just before use in the presence of the Engineer. Previously opened geocell products will be rejected.

Manufacture geocells from virgin polyethylene resin with no more than 10% rework, also called "regrind", materials. Use geocells made from textured and perforated HDPE strips with an open area of 10% to 20% and properties that meet Table 1056-5.

| TABLE 1056-5 GEOCELL REQUIREMENTS | | | | | |
|---|------------------|--------------------------------|--|--|--|
| Property Minimum Requirement Test Method | | | | | |
| Cell Depth | 4" | N/A | | | |
| Sheet Thickness | 50 mil -5%, +10% | ASTM D5199 | | | |
| Density | 58.4 lb/cf | ASTM D1505 | | | |
| Carbon Black Content | 1.5% | ASTM D1603 or D4218 | | | |
| ESCR ^A | 5000 hr | ASTM D1693 | | | |
| Coefficient of Direct Sliding (with material that meets AASHTO M 145 for soil classification A-2) | 0.85 | ASTM D5321 | | | |
| Short-Term Seam (Peel) Strength (for 4" seam) | 320 lb | USACE ^C Technical | | | |
| Long-Term Seam (Hang) Strength ^B (for 4" seam) | 160 lb | Report GL-86-19, Appendix A | | | |

- A. Environmental Stress Crack Resistance.
- **B.** Minimum test period of 168 hr with a temperature change from 74°F to 130°F in 1-hour cycles.
- **C.** US Army Corps of Engineers.

Provide geocell accessories (e.g., stakes, pins, clips, staples, rings, tendons, anchors, deadmen, etc.) recommended by the Geocell Manufacturer.

#57 STONE:

7-18-06 SPI 10 -01

Description

The Contractor shall place #57 stone in accordance with the details in the plans and the following provision.

Materials

ItemSection# 57 Stone1005

Construction Methods

The stone shall be placed and compacted as directed by the Engineer.

Measurement and Payment

#57 Stone will be measured and paid in tons that are completed and accepted. The stone will be measured by being weighed in trucks on certified platform scales or other certified weighing devices. The price and payment will be full compensation for furnishing, hauling, placing, and all incidentals necessary to complete the work.

Payment will be made under:

Pay ItemPay Unit#57 StoneTon

TEMPORARY SHORING:

(2-20-07) (Rev. 3-17-15) SP11 R02

Description

Temporary shoring includes cantilever, braced and anchored shoring and temporary mechanically stabilized earth (MSE) walls. Temporary shoring does not include trench boxes. At the Contractor's option, use any type of temporary shoring unless noted otherwise in the plans or as directed. Design and construct temporary shoring based on actual elevations and shoring dimensions in accordance with the contract and accepted submittals. Construct temporary shoring at locations shown in the plans and as directed. Temporary shoring is required to maintain traffic when a 2:1 (H:V) slope from the top of an embankment or bottom of an excavation will intersect the existing ground line less than 5 ft from the edge of pavement of an open travelway. This provision does not apply to pipe, inlet or utility installation unless noted otherwise in the plans.

Positive protection includes concrete barrier and temporary guardrail. Provide positive protection for temporary shoring at locations shown in the plans and as directed. Positive protection is required if temporary shoring is located in the clear zone in accordance with the AASHTO Roadside Design Guide.

(A) Cantilever and Braced Shoring

Cantilever shoring consists of steel sheet piles or H-piles with timber lagging. Braced shoring consists of sheet piles or H-piles with timber lagging and bracing such as beams, plates, walers, struts, rakers, etc. Define "piles" as sheet piles or H-piles.

(B) Anchored Shoring

Anchored shoring consists of sheet piles with walers or H-piles with timber lagging anchored with ground or helical anchors. Driven anchors may be accepted at the discretion of the Engineer. A ground anchor consists of a grouted steel bar or multi-strand tendon with an anchorage. A helical anchor consists of a lead section with a central steel shaft and

at least one helix steel plate followed by extensions with only central shafts (no helixes) and an anchorage. Anchorages consist of steel bearing plates with washers and hex nuts for bars or steel wedge plates and wedges for strands. Use a prequalified Anchored Wall Contractor to install ground anchors. Define "anchors" as ground, helical or driven anchors.

(C) Temporary MSE Walls

Temporary MSE walls include temporary geosynthetic and wire walls. Define "temporary wall" as a temporary MSE wall. Define "reinforcement" as geotextile, geogrid, welded wire grid or metallic strip reinforcement.

Temporary geosynthetic walls consist of geotextile or geogrid reinforcement wrapped behind welded wire facing. Define "temporary geotextile wall" as a temporary geosynthetic wall with geotextile reinforcement and "temporary geogrid wall" as a temporary geosynthetic wall with geogrid reinforcement.

Temporary wire walls consist of welded wire grid or metallic strip reinforcement connected to welded wire facing. Define "Wire Wall Vendor" as the vendor supplying the temporary wire wall.

(D) Embedment

Define "embedment" for cantilever, braced and anchored shoring as the pile depth below the grade in front of shoring. Define "embedment" for temporary walls as the wall height below the grade in front of walls.

(E) Positive Protection

Define "unanchored or anchored portable concrete barrier" as portable concrete barrier (PCB) that meets Standard Drawing No. 1170.01 of the 2012 Roadway Standard Drawings. Define "concrete barrier" as unanchored or anchored PCB or an approved equal. Define "temporary guardrail" as temporary steel beam guardrail that meets Standard Drawing No. 862.02 of the 2012 Roadway Standard Drawings.

Materials

Refer to the 2012 Standard Specifications.

| Item | Section |
|--------------------------------|---------|
| Anchor Pins | 1056-2 |
| Concrete Barrier Materials | 1170-2 |
| Flowable Fill, Excavatable | 1000-6 |
| Geotextiles | 1056 |
| Grout | 1003 |
| Portland Cement Concrete | 1000 |
| Select Material | 1016 |
| Steel Beam Guardrail Materials | 862-2 |

| Item | Section |
|-------------------------------|-----------|
| Steel Plates | 1072-2 |
| Steel Sheet Piles and H-Piles | 1084 |
| Untreated Timber | 1082-2 |
| Welded Wire Reinforcement | 1070-3 |
| Wire Staples | 1060-8(D) |

Provide Type 6 material certifications for shoring materials in accordance with Article 106-3 of the 2012 Standard Specifications. Use Class IV select material (standard size No. ABC) for temporary guardrail. Use neat cement grout for Type 2 grout for ground anchors. Use Class A concrete that meets Article 450-2 of the 2012 Standard Specifications or Type 1 grout for drilledin piles. Provide untreated timber with a thickness of at least 3" and a bending stress of at least 1,000 psi for timber lagging. Provide steel bracing that meets ASTM A36.

(A) Shoring Backfill

Use Class II, Type 1, Class III, Class V or Class VI select material or material that meets AASHTO M 145 for soil classification A-2-4 with a maximum PI of 6 for shoring backfill except do not use A-2-4 soil for backfill around culverts.

(B) Anchors

Store anchor materials on blocking a minimum of 12" above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials. Load, transport, unload and store anchor materials so materials are kept clean and free of damage. Bent, damaged or defective materials will be rejected.

(1) Ground Anchors

Use high-strength deformed steel bars that meet AASHTO M 275 or seven-wire strands that meet ASTM A886 or Article 1070-5 of the 2012 Standard Specifications. Splice bars in accordance with Article 1070-9 of the 2012 Standard Specifications. Do not splice strands. Use bondbreakers, spacers and centralizers that meet Article 6.3.5 of the AASHTO LRFD Bridge Construction Specifications.

(2) Helical Anchors

Use helical anchors with an ICC Evaluation Service, Inc. (ICC-ES) report. Helical anchors without an ICC-ES report may be approved at the discretion of the Engineer. Provide couplers, thread bar adapters and bolts recommended by the Anchor Manufacturer to connect helical anchors together and to piles.

(3) Anchorages

Provide steel plates for bearing plates and steel washers, hex nuts, wedge plates and wedges recommended by the Anchor Manufacturer.

(C) Temporary Walls

(1) Welded Wire Facing

Use welded wire reinforcement for welded wire facing, struts and wires. For temporary wire walls, provide welded wire facing supplied by the Wire Wall Vendor or a manufacturer approved or licensed by the vendor. For temporary wire walls with separate reinforcement and facing components, provide connectors (e.g., bars, clamps, plates, etc.) and fasteners (e.g., bolts, nuts, washers, etc.) required by the Wire Wall Vendor.

(2) Geotextiles

Provide Type 2 geotextile for separation and retention geotextiles. Provide Type 5 geotextile for geotextile reinforcement with ultimate tensile strengths in accordance with the accepted submittals.

(3) Geogrid Reinforcement

Handle and store geogrids in accordance with Article 1056-2 of the 2012 Standard Specifications. Define "machine direction" (MD) and "cross-machine direction" (CD) for geogrids in accordance with ASTM D4439.

Use geogrids with a roll width of at least 4 ft and an "approved" or "approved for provisional use" status code. The list of approved geogrids is available from: connect.ncdot.gov/resources/Materials/Pages/SoilsLaboratory.aspx

Provide geogrids for geogrid reinforcement with design strengths in accordance with the accepted submittals. Geogrids are typically approved for ultimate tensile strengths in the MD and CD or short-term design strengths for a 3-year design life in the MD based on material type. Define material type from the website above for shoring backfill as follows:

| Material Type | Shoring Backfill |
|------------------|---|
| Borrow | A-2-4 Soil |
| Fine Aggregate | Class II, Type 1 or Class III Select Material |
| Coarse Aggregate | Class V or VI Select Material |

(4) Welded Wire Grid and Metallic Strip Reinforcement

Provide welded wire grid and metallic strip reinforcement supplied by the Wire Wall Vendor or a manufacturer approved or licensed by the vendor. Use welded wire grid reinforcement ("mesh", "mats" and "ladders") that meet Article 1070-3 of the 2012 Standard Specifications and metallic strip reinforcement ("straps") that meet ASTM A572 or A1011.

Preconstruction Requirements

(A) Concrete Barrier

Define "clear distance" behind concrete barrier as the horizontal distance between the barrier and edge of pavement. The minimum required clear distance for concrete barrier is shown in the plans. At the Contractor's option or if the minimum required clear distance is not available, set concrete barrier next to and up against traffic side of temporary shoring except for barrier above temporary walls. Concrete barrier with the minimum required clear distance is required above temporary walls.

(B) Temporary Guardrail

Define "clear distance" behind temporary guardrail as the horizontal distance between guardrail posts and temporary shoring. At the Contractor's option or if clear distance for cantilever, braced and anchored shoring is less than 4 ft, attach guardrail to traffic side of shoring as shown in the plans. Place ABC in clear distance and around guardrail posts instead of pavement. Do not use temporary guardrail above temporary walls.

(C) Temporary Shoring Designs

Before beginning temporary shoring design, survey existing ground elevations in the vicinity of shoring locations to determine actual design heights (H). Submit 8 copies of working drawings and 3 copies of design calculations and a PDF copy of each for temporary shoring designs in accordance with Article 105-2 of the 2012 Standard Specifications. Submit working drawings showing plan views, shoring profiles, typical sections and details of temporary shoring design and construction sequence. Do not begin shoring construction until a design submittal is accepted.

Have cantilever and braced shoring designed, detailed and sealed by an engineer licensed in the state of North Carolina. Use a prequalified Anchored Wall Design Consultant to design anchored shoring. Provide anchored shoring designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for an Anchored Wall Design Consultant. Include details in anchored shoring working drawings of anchor locations and lock-off loads, unit grout/ground bond strengths for ground anchors or minimum installation torque and torsional strength rating for helical anchors and if necessary, obstructions extending through shoring or interfering with anchors. Include details in the anchored shoring construction sequence of pile and anchor installation, excavation and anchor testing.

Use a prequalified MSE Wall Design Consultant to design temporary walls. Provide temporary wall designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for the MSE Wall Design Consultant. Include details in temporary wall working drawings of geotextile and reinforcement types, locations and directions and obstructions extending through walls or interfering with reinforcement.

(1) Soil Parameters

Design temporary shoring for the assumed soil parameters and groundwater elevations shown in the plans. Assume the following soil parameters for shoring backfill:

(a) Unit weight $(\gamma) = 120 \text{ lb/cf};$

| Friction Angle (φ) | Shoring Backfill | |
|--------------------|---|--|
| 30° | A-2-4 Soil | |
| 34° | Class II, Type 1 or Class III Select Material | |
| 38° | Class V or VI Select Material | |

(c) Cohesion (c) = 0 lb/sf.

(2) Traffic Surcharge

(b)

Design temporary shoring for a traffic surcharge of 250 lb/sf if traffic will be above and within H of shoring. This traffic surcharge does not apply to construction traffic. Design temporary shoring for any construction surcharge if construction traffic will be above and within H of shoring. For LRFD shoring designs, apply traffic (live load) surcharge in accordance with Figure C11.5.5-3 of the *AASHTO LRFD Bridge Design Specifications*.

(3) Cantilever, Braced and Anchored Shoring Designs

Use shoring backfill for fill sections and voids between cantilever, braced and anchored shoring and the critical failure surface. Use concrete or grout for embedded portions of drilled-in H-piles. Do not use drilled-in sheet piles.

Define "top of shoring" for cantilever, braced and anchored shoring as where the grade intersects the back of sheet piles or H-piles and timber lagging. Design cantilever, braced and anchored shoring for a traffic impact load of 2,000 lb/ft applied 18" above top of shoring if concrete barrier is above and next to shoring or temporary guardrail is above and attached to shoring. For anchored shoring designs, apply traffic impact load as horizontal load ($P_{\rm H1}$) in accordance with Figure 3.11.6.3-2(a) of the AASHTO LRFD specifications.

Extend cantilever, braced and anchored shoring at least 32" above top of shoring if shoring is designed for traffic impact. Otherwise, extend shoring at least 6" above top of shoring.

Design cantilever, braced and anchored shoring for a maximum deflection of 3" if the horizontal distance to the closest edge of pavement or structure is less than H. Otherwise, design shoring for a maximum deflection of 6". Design cantilever and braced shoring in accordance with the plans and AASHTO Guide Design Specifications for Bridge Temporary Works.

Design anchored shoring in accordance with the plans and Article 11.9 of the AASHTO LRFD Bridge Design Specifications. Use a resistance factor of 0.80 for tensile resistance of anchors with bars, strands or shafts. Extend the unbonded length for ground anchors and the shallowest helix for helical anchors at least 5 ft

behind the critical failure surface. Do not extend anchors beyond right-of-way or easement limits. If existing or future obstructions such as foundations, guardrail posts, pavements, pipes, inlets or utilities will interfere with anchors, maintain a clearance of at least 6" between obstructions and anchors.

(4) Temporary Wall Designs

Use shoring backfill in the reinforced zone of temporary walls. Separation geotextiles are required between shoring backfill and backfill, natural ground or culverts along the sides of the reinforced zone perpendicular to the wall face. For Class V or VI select material in the reinforced zone, separation geotextiles are also required between shoring backfill and backfill or natural ground on top of and at the back of the reinforced zone.

Design temporary walls in accordance with the plans and Article 11.10 of the *AASHTO LRFD Bridge Design Specifications*. Embed temporary walls at least 18" except for walls on structures or rock as determined by the Engineer. Use a uniform reinforcement length throughout the wall height of at least 0.7H or 6 ft, whichever is longer. Extend the reinforced zone at least 6" beyond end of reinforcement. Do not locate the reinforced zone outside right-of-way or easement limits.

Use the simplified method for determining maximum reinforcement loads in accordance with the AASHTO LRFD specifications. For geotextile reinforcement, use geotextile properties approved by the Department or default values in accordance with the AASHTO LRFD specifications. For geogrid reinforcement, use approved geogrid properties available from the website shown elsewhere in this provision. If the website does not list a short-term design strength for an approved geogrid, use a short-term design strength equal to the ultimate tensile strength divided by 3.5 for the geogrid reinforcement. Use geosynthetic properties for the direction reinforcement will be installed, a 3-year design life and shoring backfill to be used in the reinforced zone.

Do not use more than 4 different reinforcement strengths for each temporary geosynthetic wall. Design temporary geotextile walls for a reinforcement coverage ratio (R_c) of 1.0 and temporary geogrid walls for an R_c of at least 0.8. For geogrid reinforcement with an R_c of less than 1.0, use a maximum horizontal clearance between geogrids of 3 ft and stagger reinforcement so geogrids are centered over gaps in the reinforcement layer below.

For temporary geosynthetic walls, use "L" shaped welded wire facing with 18" to 24" long legs. Locate geotextile or geogrid reinforcement so reinforcement layers are at the same level as the horizontal legs of welded wire facing. Use vertical reinforcement spacing equal to facing height. Wrap geotextile or geogrid reinforcement behind welded wire facing and extend reinforcement at least 3 ft back behind facing into shoring backfill.

For temporary wire walls with separate reinforcement and facing components, attach welded wire grid or metallic strip reinforcement to welded wire facing with

a connection approved by the Department. For temporary geogrid and wire walls, retain shoring backfill at welded wire facing with retention geotextiles and extend geotextiles at least 3 ft back behind facing into backfill.

(D) Preconstruction Meeting

The Engineer may require a shoring preconstruction meeting to discuss the construction, inspection and testing of the temporary shoring. If required and if this meeting occurs before all shoring submittals have been accepted, additional preconstruction meetings may be required before beginning construction of temporary shoring without accepted submittals. The Resident, District or Bridge Maintenance Engineer, Bridge or Roadway Construction Engineer, Geotechnical Operations Engineer, Contractor and Shoring Contractor Superintendent will attend preconstruction meetings.

Construction Methods

Control drainage during construction in the vicinity of shoring. Direct run off away from shoring and shoring backfill. Contain and maintain backfill and protect material from erosion.

Install positive protection in accordance with the contract and accepted submittals. Use PCB in accordance with Section 1170 of the 2012 Standard Specifications and Standard Drawing No. 1170.01 of the 2012 Roadway Standard Drawings. Use temporary guardrail in accordance with Section 862 of the 2012 Standard Specifications and Standard Drawing No. 862.01, 862.02 and 862.03 of the 2012 Roadway Standard Drawings.

(A) Tolerances

Construct shoring with the following tolerances:

- (1) Horizontal wires of welded wire facing are level in all directions,
- (2) Shoring location is within 6" of horizontal and vertical alignment shown in the accepted submittals, and
- (3) Shoring plumbness (batter) is not negative and within 2° of vertical.

(B) Cantilever, Braced and Anchored Shoring Installation

If over excavation behind cantilever, braced or anchored shoring is shown in the accepted submittals, excavate before installing piles. Otherwise, install piles before excavating for shoring. Install cantilever, braced or anchored shoring in accordance with the construction sequence shown in the accepted submittals. Remove piles and if applicable, timber lagging when shoring is no longer needed.

(1) Pile Installation

Install piles with the minimum required embedment and extension in accordance with Subarticles 450-3(D) and 450-3(E) of the 2012 Standard Specifications except

that a pile driving equipment data form is not required. Piles may be installed with a vibratory hammer as approved by the Engineer.

Do not splice sheet piles. Use pile excavation to install drilled-in H-piles. After filling holes with concrete or grout to the elevations shown in the accepted submittals, remove any fluids and fill remaining portions of holes with flowable fill. Cure concrete or grout at least 7 days before excavating.

Notify the Engineer if refusal is reached before pile excavation or driven piles attain the minimum required embedment. When this occurs, a revised design submittal may be required.

(2) Excavation

Excavate in front of piles from the top down in accordance with the accepted submittals. For H-piles with timber lagging and braced and anchored shoring, excavate in staged horizontal lifts with a maximum height of 5 ft. Remove flowable fill and material in between H-piles as needed to install timber lagging. Position lagging with at least 3" of contact in the horizontal direction between the lagging and pile flanges. Do not excavate the next lift until timber lagging for the current lift is installed and if applicable, bracing and anchors for the current lift are accepted. Backfill behind cantilever, braced or anchored shoring with shoring backfill.

(3) Anchor Installation

If applicable, install foundations located behind anchored shoring before installing anchors. Fabricate and install ground anchors in accordance with the accepted submittals, Articles 6.4 and 6.5 of the *AASHTO LRFD Bridge Construction Specifications* and the following unless otherwise approved:

- (a) Materials in accordance with this provision are required instead of materials conforming to Articles 6.4 and 6.5.3 of the AASHTO LRFD Specifications,
- (b) Encapsulation-protected ground anchors in accordance with Article 6.4.1.2 of the AASHTO LRFD specifications are not required, and
- (c) Corrosion protection for unbonded lengths of ground anchors and anchorage covers are not required.
- (d) Measure grout temperature, density and flow during grouting with at least the same frequency grout cubes are made for compressive strength. Perform density and flow field tests in the presence of the Engineer in accordance with American National Standards Institute/American Petroleum Institute Recommended Practice 13B-1 (Section 4, Mud Balance) and ASTM C939 (Flow Cone), respectively.

Install helical anchors in accordance with the accepted submittals and Anchor Manufacturer's instructions. Measure torque during installation and do not exceed the torsional strength rating of the helical anchor. Attain the minimum required installation torque and penetration before terminating anchor installation. When replacing a helical anchor, embed last helix of the replacement anchor at least 3 helix plate diameters past the location of the first helix of the previous anchor.

(4) Anchor Testing

Proof test and lock-off anchors in accordance with the accepted submittals and Article 6.5.5 of the AASHTO LRFD Bridge Construction Specifications except for the acceptance criteria in Article 6.5.5.5. For the AASHTO LRFD specifications, "ground anchor" refers to a ground or helical anchor and "tendon" refers to a bar, strand or shaft.

(a) Anchor Acceptance

Anchor acceptance is based in part on the following criteria.

- (i) For ground and helical anchors, total movement is less than 0.04" between the 1 and 10 minute readings or less than 0.08" between the 6 and 60 minute readings.
- (ii) For ground anchors, total movement at maximum test load exceeds 80% of the theoretical elastic elongation of the unbonded length.

(b) Anchor Test Results

Submit 2 copies of anchor test records including movement versus load plots for each load increment within 24 hours of completing each row of anchors. The Engineer will review the test records to determine if the anchors are acceptable.

If the Engineer determines an anchor is unacceptable, revise the anchor design or installation methods. Submit a revised anchored shoring design for acceptance and provide an acceptable anchor with the revised design or installation methods. If required, replace the anchor or provide additional anchors with the revised design or installation methods.

(C) Temporary Wall Installation

Excavate as necessary for temporary walls in accordance with the plans and accepted submittals. If applicable, install foundations located in the reinforced zone before placing shoring backfill or reinforcement unless otherwise approved. Notify the Engineer when foundation excavation is complete. Do not place shoring backfill or reinforcement until excavation dimensions and foundation material are approved.

Erect welded wire facing so the wall position is as shown in the plans and accepted submittals. Set welded wire facing adjacent to each other in the horizontal and vertical

direction to completely cover the wall face with facing. Stagger welded wire facing to create a running bond by centering facing over joints in the row below.

Wrap geotextile reinforcement and retention geotextiles behind welded wire facing as shown in the plans and accepted submittals and cover geotextiles with at least 3" of shoring backfill. Overlap adjacent geotextile reinforcement and retention and separation geotextiles at least 18" with seams oriented perpendicular to the wall face. Hold geotextiles in place with wire staples or anchor pins as needed.

Place reinforcement within 3" of locations shown in the plans and accepted submittals and in slight tension free of kinks, folds, wrinkles or creases. Install reinforcement with the direction shown in the plans and accepted submittals. For temporary wire walls with separate reinforcement and facing components, attach welded wire grid or metallic strip reinforcement to welded wire facing as shown in the accepted submittals. Do not splice or overlap reinforcement so seams are parallel to the wall face. Contact the Engineer when unanticipated existing or future obstructions such as foundations, pavements, pipes, inlets or utilities will interfere with reinforcement.

Place shoring backfill in the reinforced zone in 8" to 10" thick lifts. Compact A-2-4 soil and Class II, Type 1 and Class III select material in accordance with Subarticle 235-3(C) of the 2012 Standard Specifications. Use only hand operated compaction equipment to compact backfill within 3 ft of welded wire facing. At a distance greater than 3 ft, compact shoring backfill with at least 4 passes of an 8 ton to 10 ton vibratory roller in a direction parallel to the wall face. Smooth wheeled or rubber tired rollers are also acceptable for compacting backfill. Do not use sheepsfoot, grid rollers or other types of compaction equipment with feet. Do not displace or damage reinforcement when placing and compacting shoring backfill. End dumping directly on geotextile or geogrid reinforcement is not permitted. Do not operate heavy equipment on reinforcement until it is covered with at least 8" of shoring backfill. Replace any damaged reinforcement to the satisfaction of the Engineer.

Backfill for temporary walls outside the reinforced zone in accordance with Article 410-8 of the 2012 Standard Specifications. Bench temporary walls into the sides of excavations where applicable. For temporary geosynthetic walls with top of wall within 5 ft of finished grade, remove top facing and incorporate top reinforcement layer into fill when placing fill in front of wall. Temporary walls remain in place permanently unless otherwise required.

Measurement and Payment

Temporary Shoring will be measured and paid in square feet. Temporary walls will be measured as the square feet of exposed wall face area. Cantilever, braced or anchored shoring will be measured as the square feet of exposed shoring face area with the shoring height equal to the difference between the top and bottom of shoring elevations. Define "top of shoring" as where the grade intersects the back of sheet piles or H-piles and timber lagging. Define "bottom of shoring" as where the grade intersects front of sheet piles or H-piles and timber lagging. No measurement will be made for any embedment, shoring extension above top of shoring or pavement thickness above temporary walls.

The contract unit price for *Temporary Shoring* will be full compensation for providing shoring designs, submittals and materials, excavating, backfilling, hauling and removing excavated materials and supplying all labor, tools, equipment and incidentals necessary to construct temporary shoring.

No payment will be made for temporary shoring not shown in the plans or required by the Engineer including shoring for OSHA reasons or the Contractor's convenience. No value engineering proposals will be accepted based solely on revising or eliminating shoring locations shown in the plans or estimated quantities shown in the bid item sheets as a result of actual field measurements or site conditions.

PCB will be measured and paid in accordance with Section 1170 of the 2012 Standard Specifications. No additional payment will be made for anchoring PCB for temporary shoring. Costs for anchoring PCB will be incidental to temporary shoring.

Temporary guardrail will be measured and paid for in accordance with Section 862 of the 2012 Standard Specifications.

Payment will be made under:

Pay ItemPay UnitTemporary ShoringSquare Foot

TRUCK MOUNTED CHANGEABLE MESSAGE SIGNS:

(8-21-12)

1101.02

SP11 R10

Revise the 2012 Roadway Standard Drawings as follows:

Drawing No. 1101.02, Sheet 12, TEMPORARY LANE CLOSURES, replace General Note #11 with the following:

- 11- TRUCK MOUNTED CHANGEABLE MESSAGE SIGNS (TMCMS) USED ON SHADOW VEHICLES FOR "IN LANE" ACTIVITIES SHALL BE A MINIMUM OF 43" X 73". THE DISPLAY PANEL SHALL HAVE FULL MATRIX CAPABILITY WITH THE CAPABILITY TO PROVIDE 2 MESSAGE LINES WITH 7 CHARACTERS PER LINE WITH A MINIMUM CHARACTER HEIGHT OF 18". FOR ADDITIONAL MESSAGING, CONTACT THE WORK ZONE TRAFFIC CONTROL SECTION.
- 12- TMCMS USED FOR ADVANCED WARNING ON VEHICLES LOCATED ON THE SHOULDER MAY BE SMALLER THAN 43" X 73". THE DISPLAY PANEL SHALL HAVE THE CAPABILITY TO PROVIDE 2 MESSAGE LINES WITH 7 CHARACTERS PER LINE WITH A MINIMUM CHARACTER HEIGHT OF 18". FOR ADDITIONAL MESSAGING, CONTACT THE WORK ZONE TRAFFIC CONTROL SECTION.

Drawing No. 1101.02, Sheet 13, TEMPORARY LANE CLOSURES, replace General Note #12 with the following:

12- TRUCK MOUNTED CHANGEABLE MESSAGE SIGNS (TMCMS) USED ON SHADOW VEHICLES FOR "IN LANE" ACTIVITIES SHALL BE A MINIMUM OF 43" X 73". THE

DISPLAY PANEL SHALL HAVE FULL MATRIX CAPABILITY WITH THE CAPABILITY TO PROVIDE 2 MESSAGE LINES WITH 7 CHARACTERS PER LINE WITH A MINIMUM CHARACTER HEIGHT OF 18". FOR ADDITIONAL MESSAGING, CONTACT THE WORK ZONE TRAFFIC CONTROL SECTION.

13- TMCMS USED FOR ADVANCED WARNING ON VEHICLES LOCATED ON THE SHOULDER MAY BE SMALLER THAN 43" X 73". THE DISPLAY PANEL SHALL HAVE THE CAPABILITY TO PROVIDE 2 MESSAGE LINES WITH 7 CHARACTERS PER LINE WITH A MINIMUM CHARACTER HEIGHT OF 18". FOR ADDITIONAL MESSAGING, CONTACT THE WORK ZONE TRAFFIC CONTROL SECTION.

GROUT REFERENCES FOR POSITIVE PROTECTION:

-19-15) 1

SP11 R20

Revise the 2012 Standard Specifications as follows:

Page 11-14, Article 1170-2, Materials, line 30, in the materials table, replace "Freeze-Thaw Durable Grout, Nonshrink" with "Grout, Type 3".

Page 11-14, Article 1170-2, Materials, lines 31-32, delete the first paragraph after the materials table.

GROUT REFERENCES FOR UTILITY MANHOLES:

(8-18-15)

1525

SP15 R40

Revise the 2012 Standard Specifications as follows:

Page 15-13, Article 1525-2, Materials, line 9, in the materials table, add the following:

ItemSectionGrout, Type 21003

Page 15-13, Article 1525-2, Materials, lines 20-21, replace the third paragraph after the materials table with the following:

Use Type 2 grout with properties that meet Table 1003-2 in the *Grout Production and Delivery* provision except provide grout with a plastic consistency in accordance with ASTM C1107.

Page 15-14, Subarticle 1525-3(B), Installation of Precast Units, line 22, in the second sentence of the first paragraph, replace "non-shrink grout." with "grout."

PERMANENT SEEDING AND MULCHING:

(7-1-95) 1660

SP16 R02

The Department desires that permanent seeding and mulching be established on this project as soon as practical after slopes or portions of slopes have been graded. As an incentive to obtain an early stand of vegetation on this project, the Contractor's attention is called to the following:

For all permanent seeding and mulching that is satisfactorily completed in accordance with the requirements of Section 1660 in the 2012 Standard Specifications and within the following

percentages of elapsed contract times, an additional payment will be made to the Contractor as an incentive additive. The incentive additive will be determined by multiplying the number of acres of seeding and mulching satisfactorily completed times the contract unit bid price per acre for Seeding and Mulching times the appropriate percentage additive.

| Percentage of Elapsed Contract Time | Percentage Additive |
|-------------------------------------|---------------------|
| 0% - 30% | 30% |
| 30.01% - 50% | 15% |

Percentage of elapsed contract time is defined as the number of calendar days from the date of availability of the contract to the date the permanent seeding and mulching is acceptably completed divided by the total original contract time.

STANDARD SPECIAL PROVISION AVAILABILITY OF FUNDS – TERMINATION OF CONTRACTS

(5-20-08)

Z-2

General Statute 143C-6-11. (h) Highway Appropriation is hereby incorporated verbatim in this contract as follows:

(h) Amounts Encumbered. – Transportation project appropriations may be encumbered in the amount of allotments made to the Department of Transportation by the Director for the estimated payments for transportation project contract work to be performed in the appropriation fiscal year. The allotments shall be multiyear allotments and shall be based on estimated revenues and shall be subject to the maximum contract authority contained in General Statute 143C-6-11(c). Payment for transportation project work performed pursuant to contract in any fiscal year other than the current fiscal year is subject to appropriations by the General Assembly. Transportation project contracts shall contain a schedule of estimated completion progress, and any acceleration of this progress shall be subject to the approval of the Department of Transportation provided funds are available. The State reserves the right to terminate or suspend any transportation project contract, and any transportation project contract shall be so terminated or suspended if funds will not be available for payment of the work to be performed during that fiscal year pursuant to the contract. In the event of termination of any contract, the contractor shall be given a written notice of termination at least 60 days before completion of scheduled work for which funds are available. In the event of termination, the contractor shall be paid for the work already performed in accordance with the contract specifications.

Payment will be made on any contract terminated pursuant to the special provision in accordance with Subarticle 108-13(E) of the 2012 Standard Specifications.

STANDARD SPECIAL PROVISION NCDOT GENERAL SEED SPECIFICATION FOR SEED QUALITY

(5-17-11) Z-3

Seed shall be sampled and tested by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory. When said samples are collected, the vendor shall supply an independent laboratory report for each lot to be tested. Results from seed so sampled shall be final. Seed not meeting the specifications shall be rejected by the Department of Transportation and shall not be delivered to North Carolina Department of Transportation warehouses. If seed has been delivered it shall be available for pickup and replacement at the supplier's expense.

Any re-labeling required by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory, that would cause the label to reflect as otherwise specified herein shall be rejected by the North Carolina Department of Transportation.

Seed shall be free from seeds of the noxious weeds Johnsongrass, Balloonvine, Jimsonweed, Witchweed, Itchgrass, Serrated Tussock, Showy Crotalaria, Smooth Crotalaria, Sicklepod, Sandbur, Wild Onion, and Wild Garlic. Seed shall not be labeled with the above weed species on the seed analysis label. Tolerances as applied by the Association of Official Seed Analysts will NOT be allowed for the above noxious weeds except for Wild Onion and Wild Garlic.

Tolerances established by the Association of Official Seed Analysts will generally be recognized. However, for the purpose of figuring pure live seed, the found pure seed and found germination percentages as reported by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory will be used. Allowances, as established by the NCDOT, will be recognized for minimum pure live seed as listed on the following pages.

The specifications for restricted noxious weed seed refers to the number per pound as follows:

| Limitations per Lb. Of Seed | Restricted Noxious Weed | Limitations per Lb. of Seed |
|-----------------------------|---|---|
| 4 seeds | Cornflower (Ragged Robin) | 27 seeds |
| 4 seeds | Texas Panicum | 27 seeds |
| 4 seeds | Bracted Plantain | 54 seeds |
| 4 seeds | Buckhorn Plantain | 54 seeds |
| 8 seeds | Broadleaf Dock | 54 seeds |
| 10 seeds | Curly Dock | 54 seeds |
| 12 seeds | Dodder | 54 seeds |
| 27 seeds | Giant Foxtail | 54 seeds |
| 27 seeds | Horsenettle | 54 seeds |
| 27 seeds | Quackgrass | 54 seeds |
| 27 seeds | Wild Mustard | 54 seeds |
| 27 seeds | | |
| | Lb. Of Seed 4 seeds 4 seeds 4 seeds 4 seeds 4 seeds 8 seeds 10 seeds 12 seeds 27 seeds 27 seeds 27 seeds 27 seeds 27 seeds | Lb. Of Seed 4 seeds Cornflower Robin) 4 seeds Texas Panicum 4 seeds Bracted Plantain 4 seeds Broadleaf Dock 10 seeds Curly Dock 12 seeds Dodder Craseds Giant Foxtail Plantain United Street United |

Seed of Pensacola Bahiagrass shall not contain more than 7% inert matter, Kentucky Bluegrass, Centipede and Fine or Hard Fescue shall not contain more than 5% inert matter whereas a maximum of 2% inert matter will be allowed on all other kinds of seed. In addition, all seed shall

not contain more than 2% other crop seed nor more than 1% total weed seed. The germination rate as tested by the North Carolina Department of Agriculture shall not fall below 70%, which includes both dormant and hard seed. Seed shall be labeled with not more than 7%, 5% or 2% inert matter (according to above specifications), 2% other crop seed and 1% total weed seed.

Exceptions may be made for minimum pure live seed allowances when cases of seed variety shortages are verified. Pure live seed percentages will be applied in a verified shortage situation. Those purchase orders of deficient seed lots will be credited with the percentage that the seed is deficient.

FURTHER SPECIFICATIONS FOR EACH SEED GROUP ARE GIVEN BELOW:

Minimum 85% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 83% pure live seed will not be approved.

Sericea Lespedeza Oats (seeds)

Minimum 80% pure live seed; maximum 1% total weed seed; maximum 2% total other crop; maximum 144 restricted noxious weed seed per pound. Seed less than 78% pure live seed will not be approved.

Tall Fescue (all approved varieties)

Kobe Lespedeza

Bermudagrass

Browntop Millet

Carpetgrass

Minimum 78% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 76% pure live seed will not be approved.

Common or Sweet Sundangrass

Minimum 76% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 74% pure live seed will not be approved.

Rye (grain; all varieties) Kentucky Bluegrass (all approved varieties) Hard Fescue (all approved varieties) Shrub (bicolor) Lespedeza

Minimum 70% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 noxious weed seed per pound. Seed less than 70% pure live seed will not be approved.

Centipedegrass Japanese Millet
Crownvetch Reed Canary Grass

Pensacola Bahiagrass Zoysia

Creeping Red Fescue

Minimum 70% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 5% inert matter; maximum 144 restricted noxious weed seed per pound.

Barnyard Grass Big Bluestem Little Bluestem Bristly Locust Birdsfoot Trefoil Indiangrass Orchardgrass

Switchgrass

Yellow Blossom Sweet Clover

STANDARD SPECIAL PROVISION

ERRATA

(1-17-12) (Rev. 04-21-15)

Revise the 2012 Standard Specifications as follows:

Division 2

Page 2-7, line 31, Article 215-2 Construction Methods, replace "Article 107-26" with "Article 107-25".

Page 2-17, Article 226-3, Measurement and Payment, line 2, delete "pipe culverts,".

Page 2-20, Subarticle 230-4(B), Contractor Furnished Sources, change references as follows: Line 1, replace "(4) Buffer Zone" with "(c) Buffer Zone"; Line 12, replace "(5) Evaluation for Potential Wetlands and Endangered Species" with "(d) Evaluation for Potential Wetlands and Endangered Species"; and Line 33, replace "(6) Approval" with "(4) Approval".

Division 3

Page 3-1, after line 15, Article 300-2 Materials, replace "1032-9(F)" with "1032-6(F)".

Division 4

Page 4-77, line 27, Subarticle 452-3(C) Concrete Coping, replace "sheet pile" with "reinforcement".

Division 6

Page 6-7, line 31, Article 609-3 Field Verification of Mixture and Job Mix Formula Adjustments, replace "30" with "45".

Page 6-10, line 42, Subarticle 609-6(C)(2), replace "Subarticle 609-6(E)" with "Subarticle 609-6(D)".

Page 6-11, Table 609-1 Control Limits, replace "Max. Spec. Limit" for the Target Source of $P_{0.075}/P_{be}$ Ratio with "1.0".

Page 6-40, Article 650-2 Materials, replace "Subarticle 1012-1(F)" with "Subarticle 1012-1(E)"

Division 7

Page 7-1, Article 700-3, CONCRETE HAULING EQUIPMENT, line 33, replace "competion" with "completion".

Division 8

Page 8-23, line 10, Article 838-2 Materials, replace "Portland Cement Concrete, Class B" with "Portland Cement Concrete, Class A".

Division 10

Page 10-166, Article 1081-3 Hot Bitumen, replace "Table 1081-16" with "Table 1081-2", replace "Table 1081-17" with "Table 1081-3", and replace "Table 1081-18" with "Table 1081-4".

Division 12

Page 12-7, Table 1205-3, add "FOR THERMOPLASTIC" to the end of the title.

Page 12-8, Subarticle 1205-5(B), line 13, replace "Table 1205-2" with "Table 1205-4".

Page 12-8, Table 1205-4 and 1205-5, replace "THERMOPLASTIC" in the title of these tables with "POLYUREA".

Page 12-9, Subarticle 1205-6(B), line 21, replace "Table 1205-4" with "Table 1205-6".

Page 12-11, Subarticle 1205-8(C), line 25, replace "Table 1205-5" with "Table 1205-7".

Division 15

Page 15-4, Subarticle 1505-3(F) Backfilling, line 26, replace "Subarticle 235-4(C)" with "Subarticle 235-3(C)".

Page 15-6, Subarticle 1510-3(B), after line 21, replace the allowable leakage formula with the following: $W=LD\sqrt{P} \div 148,000$

Page 15-6, Subarticle 1510-3(B), line 32, delete "may be performed concurrently or" and replace with "shall be performed".

Page 15-17, Subarticle 1540-3(E), line 27, delete "Type 1".

Division 17

Page 17-26, line 42, Subarticle 1731-3(D) Termination and Splicing within Interconnect Center, delete this subarticle.

Revise the 2012 Roadway Standard Drawings as follows:

1633.01 Sheet 1 of 1, English Standard Drawing for Matting Installation, replace "1633.01" with "1631.01".

STANDARD SPECIAL PROVISION

PLANT AND PEST QUARANTINES

(Imported Fire Ant, Gypsy Moth, Witchweed, Emerald Ash Borer, And Other Noxious Weeds)

(3-18-03) (Rev. 12-20-16) Z-04a

Within Quarantined Area

This project may be within a county regulated for plant and/or pests. If the project or any part of the Contractor's operations is located within a quarantined area, thoroughly clean all equipment prior to moving out of the quarantined area. Comply with federal/state regulations by obtaining a certificate or limited permit for any regulated article moving from the quarantined area.

Originating in a Quarantined County

Obtain a certificate or limited permit issued by the N.C. Department of Agriculture/United States Department of Agriculture. Have the certificate or limited permit accompany the article when it arrives at the project site.

Contact

Contact the N.C. Department of Agriculture/United States Department of Agriculture at 1-800-206-9333, 919-707-3730, or http://www.ncagr.gov/plantindustry/ to determine those specific project sites located in the quarantined area or for any regulated article used on this project originating in a quarantined county.

Regulated Articles Include

- 1. Soil, sand, gravel, compost, peat, humus, muck, and decomposed manure, separately or with other articles. This includes movement of articles listed above that may be associated with cut/waste, ditch pulling, and shoulder cutting.
- 2. Plants with roots including grass sod.
- 3. Plant crowns and roots.
- 4. Bulbs, corms, rhizomes, and tubers of ornamental plants.
- 5. Hay, straw, fodder, and plant litter of any kind.
- 6. Clearing and grubbing debris.
- 7. Used agricultural cultivating and harvesting equipment.
- 8. Used earth-moving equipment.
- 9. Any other products, articles, or means of conveyance, of any character, if determined by an inspector to present a hazard of spreading imported fire ant, gypsy moth, witchweed, emerald ash borer, or other noxious weeds.

STANDARD SPECIAL PROVISION

AWARD OF CONTRACT

(6-28-77)(Rev 2/16/2016) Z-6

"The North Carolina Department of Transportation, in accordance with the provisions of *Title VI* of the Civil Rights Act of 1964 (78 Stat. 252) and the Regulations of the Department of Transportation (49 C.F.R., Part 21), issued pursuant to such act, hereby notifies all bidders that it will affirmatively insure that the contract entered into pursuant to this advertisement will be awarded to the lowest responsible bidder without discrimination on the ground of race, color, or national origin".

TITLE VI AND NONDISCRIMINATION

I. Title VI Assurance

During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

- (1) Compliance with Regulations: The contractor shall comply with the Regulation relative to nondiscrimination in Federally-assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
- (2) **Nondiscrimination:** The Contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.
- (3) Solicitations for Subcontractors, Including Procurements of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
- (4) Information and Reports: The contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the North Carolina Department of Transportation (NCDOT) or the Federal Highway Administration (FHWA) to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information the contractor shall so certify to the NCDOT, or the FHWA as appropriate, and shall set forth what efforts it has made to obtain the information.

- (5) Sanctions for Noncompliance: In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the NCDOT shall impose such contract sanctions as it or the FHWA may determine to be appropriate, including, but not limited to:
 - (a) Withholding of payments to the contractor under the contract until the contractor complies, and/or
 - (b) Cancellation, termination or suspension of the contract, in whole or in part.
- (6) Incorporation of Provisions: The contractor shall include the provisions of paragraphs (1) through (6) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto.

The contractor shall take such action with respect to any subcontractor procurement as the NCDOT or the FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance: provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the NCDOT to enter into such litigation to protect the interests of the NCDOT, and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

II. <u>Title VI Nondiscrimination Program</u>

Title VI of the 1964 Civil Rights Act, 42 U.S.C. 2000d, provides that: "No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." The broader application of nondiscrimination law is found in other statutes, executive orders, and regulations (see Section III, Pertinent Nondiscrimination Authorities), which provide additional protections based on age, sex, disability and religion. In addition, the 1987 Civil Rights Restoration Act extends nondiscrimination coverage to all programs and activities of federal-aid recipients and contractors, including those that are not federally-funded.

Nondiscrimination Assurance

The North Carolina Department of Transportation (NCDOT) hereby gives assurance that no person shall on the ground of race, color, national origin, sex, age, and disability, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity conducted by the recipient, as provided by Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, and any other related Civil Rights authorities, whether those programs and activities are federally funded or not.

Obligation

During the performance of this contract, the Contractor and its subcontractors are responsible for complying with NCDOT's Title VI Program. The Contractor must ensure that NCDOT's Notice of Nondiscrimination is posted in conspicuous locations accessible to all employees and subcontractors on the jobsite, along with the Contractor's own Equal Employment Opportunity (EEO) Policy Statement. The Contractor shall physically incorporate this "TITLE VI AND NONDISCRIMINATION" language, in its entirety, into all its subcontracts on federally-assisted and state-funded NCDOT-owned projects, and ensure its inclusion by subcontractors into all subsequent lower tier subcontracts. The Contractor and its subcontractors shall also physically incorporate the FHWA-1273, in its entirety, into all subcontracts and subsequent lower tier subcontracts on Federal-aid highway construction contracts only. The Contractor is also responsible for making its subcontractors aware of NCDOT's Discrimination Complaints Process, as follows:

FILING OF COMPLAINTS

- 1. **Applicability** These complaint procedures apply to the beneficiaries of the NCDOT's programs, activities, and services, including, but not limited to, members of the public, contractors, subcontractors, consultants, and other sub-recipients of federal and state funds.
- 2. Eligibility Any person or class of persons who believes he/she has been subjected to discrimination or retaliation prohibited by any of the Civil Rights authorities, based upon race, color, sex, age, national origin, or disability, may file a written complaint with NCDOT's Civil Rights office. The law prohibits intimidation or retaliation of any sort. The complaint may be filed by the affected individual or a representative, and must be in writing.
- **3.** Time Limits and Filing Options A complaint must be filed no later than 180 calendar days after the following:
 - > The date of the alleged act of discrimination; or
 - The date when the person(s) became aware of the alleged discrimination; or
 - ➤ Where there has been a continuing course of conduct, the date on which that conduct was discontinued or the latest instance of the conduct.

Title VI and other discrimination complaints may be submitted to the following entities:

- ➤ North Carolina Department of Transportation, Office of Equal Opportunity & Workforce Services (EOWS), External Civil Rights Section, 1511 Mail Service Center, Raleigh, NC 27699-1511; 919-508-1808 or toll free 800-522-0453
- ➤ US Department of Transportation, Departmental Office of Civil Rights, External Civil Rights Programs Division, 1200 New Jersey Avenue, SE, Washington, DC 20590; 202-366-4070

Federal Highway Administration, North Carolina Division Office, 310 New Bern Avenue, Suite 410, Raleigh, NC 27601, 919-747-7010

Federal Highway Administration, Office of Civil Rights, 1200 New Jersey Avenue, SE, 8th Floor, E81-314, Washington, DC 20590, 202-366-0693 / 366-0752 **Federal Transit Administration**, Office of Civil Rights, ATTN: Title VI Program Coordinator, East Bldg. 5th Floor – TCR, 1200 New Jersey Avenue, SE, Washington, DC 20590

Federal Aviation Administration, Office of Civil Rights, 800 Independence Avenue, SW, Washington, DC 20591, 202-267-3258

- ➤ US Department of Justice, Special Litigation Section, Civil Rights Division, 950 Pennsylvania Avenue, NW, Washington, DC 20530, 202-514-6255 or toll free 877-218-5228
- **4. Format for Complaints** Complaints must be in **writing** and **signed** by the complainant(s) or a representative and include the complainant's name, address, and telephone number. Complaints received by fax or e-mail will be acknowledged and processed. Allegations received by telephone will be reduced to writing and provided to the complainant for confirmation or revision before processing. Complaints will be accepted in other languages including Braille.
- **5. Discrimination Complaint Form** Contact NCDOT EOWS at the phone number above to receive a full copy of the Discrimination Complaint Form and procedures.
- **6. Complaint Basis** Allegations must be based on issues involving race, color, national origin, sex, age, or disability. The term "basis" refers to the complainant's membership in a protected group category. Contact this office to receive a Discrimination Complaint Form.

| Protected Categories | Definition | Examples | Applicable Statutes and Regulations | |
|-------------------------|--|---|--|--|
| | | | FHWA | FTA |
| Race | An individual belonging to one of the accepted racial groups; or the perception, based usually on physical characteristics that a person is a member of a racial group | Black/African American, Hispanic/Latino, Asian, American Indian/Alaska Native, Native Hawaiian/Pacific Islander, White | Title VI of the Civil Rights Act of 1964; 49 CFR Part 21; | Title VI of the Civil Rights Act of 1964; 49 CFR Part 21; |
| Color | Color of skin, including shade of skin within a racial group | Black, White, brown, yellow, etc. | 23 CFR 200 | Circular 4702.1B |
| National Origin | Place of birth. Citizenship is not a factor. Discrimination based on language or a person's accent is also covered. | Mexican, Cuban, Japanese, Vietnamese, Chinese | | |
| Sex | Gender | Women and Men | 1973 Federal-Aid Highway Act | Title IX of the Education Amendmen ts of 1972 |
| Age | Persons of any age | 21 year old person | Age Discrimi | nation Act of |
| Disability | Physical or mental impairment, permanent or temporary, or perceived. | Blind, alcoholic, para- amputee, epileptic, diabetic, arthritic | Section 504 o Rehabilitation 1973; Americ Disabilities A | Act of cans with |

III. Pertinent Nondiscrimination Authorities

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest agrees to comply with the following non-discrimination statutes and authorities, including, but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.*), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms

- "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not):
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).
- Title VII of the Civil Rights Act of 1964 (42 U.S.C. § 2000e *et seq.*, Pub. L. 88-352), (prohibits employment discrimination on the basis of race, color, religion, sex, or national origin);
- 49 CFR Part 26, regulation to ensure nondiscrimination in the award and administration of DOT-assisted contracts in the Department's highway, transit, and airport financial assistance programs, as regards the use of Disadvantaged Business Enterprises (DBEs);
- Form FHWA-1273, "Required Contract Provisions," a collection of contract provisions and proposal notices that are generally applicable to *all Federal-aid construction projects* and must be made a part of, and physically incorporated into, *all federally-assisted contracts*, as well as appropriate subcontracts and purchase orders, particularly Sections II (Nondiscrimination) and III (Nonsegregated Facilities).

STANDARD SPECIAL PROVISION

MINORITY AND FEMALE EMPLOYMENT REQUIREMENTS

Z-7

NOTICE OF REQUIREMENTS FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE NUMBER 11246)

1. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, see as shown on the attached sheet entitled "Employment Goals for Minority and Female participation".

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its effort to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project or the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

2. As used in this Notice and in the contract resulting from this solicitation, the "covered area" is the county or counties shown on the cover sheet of the proposal form and contract.

EMPLOYMENT GOALS FOR MINORITY AND FEMALE PARTICIPATION

Economic Areas

<u>Area 023 29.7%</u>

Bertie County Camden County Chowan County Gates County Hertford County Pasquotank County **Perquimans County**

Area 024 31.7%

Beaufort County Carteret County Craven County Dare County **Edgecombe County Green County** Halifax County Hyde County Jones County **Lenoir County** Martin County Nash County Northampton County Pamlico County Pitt County Tyrrell County **Washington County** Wayne County

Area 025 23.5%

Wilson County

Columbus County **Duplin County Onslow County Pender County**

Area 026 33.5% Bladen County **Hoke County Richmond County Robeson County** Sampson County **Scotland County**

Area 027 24.7%

Chatham County Franklin County **Granville County Harnett County** Johnston County Lee County Person County Vance County Warren County

Area 028 15.5%

Alleghany County Ashe County **Caswell County Davie County** Montgomery County Moore County **Rockingham County Surry County** Watauga County Wilkes County

<u> Area 029 15.7%</u> **Alexander County**

Anson County Burke County Cabarrus County Caldwell County Catawba County Cleveland County Iredell County Lincoln County **Polk County Rowan County Rutherford County Stanly County**

Area 0480 8.5%

Buncombe County Madison County

Area 030 6.3%

Avery County Cherokee County Clay County **Graham County Haywood County** Henderson County **Jackson County** McDowell County **Macon County** Mitchell County **Swain County**

Transylvania County Yancey County

SMSA Areas

Area 5720 26.6%

Currituck County

Area 9200 20.7%

Brunswick County
New Hanover County

Area 2560 24.2%

Cumberland County

Area 6640 22.8%

Durham County
Orange County
Wake County

Area 1300 16.2% Alamance County

Area 3120 16.4%

Davidson County
Forsyth County
Guilford County
Randolph County
Stokes County
Yadkin County

Area 1520 18.3%

Gaston County Mecklenburg County Union County

Goals for Female

Participation in Each Trade

(Statewide) 6.9%

STANDARD SPECIAL PROVISION

REQUIRED CONTRACT PROVISIONS FEDERAL - AID CONSTRUCTION CONTRACTS

FHWA - 1273 Electronic Version - May 1, 2012

Z-8

- General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

- Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.
- 3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.
- 4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts. In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

- 1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:
 - a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.
 - b. The contractor will accept as its operating policy the following statement:

- "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."
- EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and
 must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility
 to do so.
- 3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:
 - a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
 - b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
 - c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.
 - d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
 - e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.
- 4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.
 - a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.
 - b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.
 - c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.
- 5. **Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:
 - a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
 - The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
 - c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
 - d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

- a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.
- b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).
- The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
- d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.
- 7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:
 - a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.
 - b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.
 - c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

- d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.
- 8. **Reasonable Accommodation for Applicants / Employees with Disabilities:** The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.
- 9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.
 - a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.
 - b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

- a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.
- b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.
- 11. **Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.
 - a. The records kept by the contractor shall document the following:
 - (1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;
 - (2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and
 - (3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;
 - b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

- b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:
 - (i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
 - (ii) The classification is utilized in the area by the construction industry; and
 - (iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
 - (2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
 - (3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
 - (4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.
- c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
- d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.
- 2. Withholding. The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

- a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the communitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.
- b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/ wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency.
 - (2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
 - (i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;
 - (ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;
 - (iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

- (3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.
- (4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.
- c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL). Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL). Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.
- d. Apprentices and Trainees (programs of the U.S. DOT). Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.
- Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.
- 6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.
- Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment
 as a contractor and a subcontractor as provided in 29 CFR 5.12.
- 8. **Compliance with Davis-Bacon and Related Act requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.
- 9. **Disputes concerning labor standards.** Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

- b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

- Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment
 of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to
 work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half
 times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
- 2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.
- 3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.
- 4. **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

- The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).
 - a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:
 - (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
 - (2) the prime contractor remains responsible for the quality of the work of the leased employees;
 - (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
 - (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.
 - b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.
- The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.
- 3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.
- 4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.
- 5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

- 1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.
- 2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions

which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

- 1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
- 2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

- a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.
- b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.
- c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.
- d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).
- f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.
- g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.
- A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous.
 A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered

transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

- i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

- (1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;
- (2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and
- (4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

- a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.
- b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
- c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.
- d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).
- e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
- f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.
- g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.
- h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

$Certification \ Regarding \ Debarment, Suspension, Ineligibility \ and \ Voluntary \ Exclusion -- Lower \ Tier \ Participants:$

- The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.
- Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

- 1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:
 - a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
 - b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- 2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.
- 3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

STANDARD SPECIAL PROVISION

ON-THE-JOB TRAINING

(10-16-07) (Rev. 4-21-15)

Z-10

Description

The North Carolina Department of Transportation will administer a custom version of the Federal On-the-Job Training (OJT) Program, commonly referred to as the Alternate OJT Program. All contractors (existing and newcomers) will be automatically placed in the Alternate Program. Standard OJT requirements typically associated with individual projects will no longer be applied at the project level. Instead, these requirements will be applicable on an annual basis for each contractor administered by the OJT Program Manager.

On the Job Training shall meet the requirements of 23 CFR 230.107 (b), 23 USC – Section 140, this provision and the On-the-Job Training Program Manual.

The Alternate OJT Program will allow a contractor to train employees on Federal, State and privately funded projects located in North Carolina. However, priority shall be given to training employees on NCDOT Federal-Aid funded projects.

Minorities and Women

Developing, training and upgrading of minorities and women toward journeyman level status is a primary objective of this special training provision. Accordingly, the Contractor shall make every effort to enroll minority and women as trainees to the extent that such persons are available within a reasonable area of recruitment. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

Assigning Training Goals

The Department, through the OJT Program Manager, will assign training goals for a calendar year based on the contractors' past three years' activity and the contractors' anticipated upcoming year's activity with the Department. At the beginning of each year, all contractors eligible will be contacted by the Department to determine the number of trainees that will be assigned for the upcoming calendar year. At that time the Contractor shall enter into an agreement with the Department to provide a self-imposed on-the-job training program for the calendar year. This agreement will include a specific number of annual training goals agreed to by both parties. The number of training assignments may range from 1 to 15 per contractor per calendar year. The Contractor shall sign an agreement to fulfill their annual goal for the year.\

Training Classifications

The Contractor shall provide on-the-job training aimed at developing full journeyman level workers in the construction craft/operator positions. Preference shall be given to providing training in the following skilled work classifications:

Equipment Operators Office Engineers

Truck Drivers Estimators

Carpenters Iron / Reinforcing Steel Workers

Concrete Finishers Mechanics
Pipe Layers Welders

The Department has established common training classifications and their respective training requirements that may be used by the contractors. However, the classifications established are not all-inclusive. Where the training is oriented toward construction applications, training will be allowed in lower-level management positions such as office engineers and estimators. Contractors shall submit new classifications for specific job functions that their employees are performing. The Department will review and recommend for acceptance to FHWA the new classifications proposed by contractors, if applicable. New classifications shall meet the following requirements:

Proposed training classifications are reasonable and realistic based on the job skill classification needs, and

The number of training hours specified in the training classification is consistent with common practices and provides enough time for the trainee to obtain journeyman level status.

The Contractor may allow trainees to be trained by a subcontractor provided that the Contractor retains primary responsibility for meeting the training and this provision is made applicable to the subcontract. However, only the Contractor will receive credit towards the annual goal for the trainee.

Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment.

No employee shall be employed as a trainee in any classification in which they have successfully completed a training course leading to journeyman level status or in which they have been employed as a journeyman.

Records and Reports

The Contractor shall maintain enrollment, monthly and completion reports documenting company compliance under these contract documents. These documents and any other information as requested shall be submitted to the OJT Program Manager.

Upon completion and graduation of the program, the Contractor shall provide each trainee with a certification Certificate showing the type and length of training satisfactorily completed.

Trainee Interviews

All trainees enrolled in the program will receive an initial and Trainee/Post graduate interview conducted by the OJT program staff.

Trainee Wages

Contractors shall compensate trainees on a graduating pay scale based upon a percentage of the prevailing minimum journeyman wages (Davis-Bacon Act). Minimum pay shall be as follows:

| 60 percent | of the journeyman wage for the first half of the training period |
|------------|---|
| 75 percent | of the journeyman wage for the third quarter of the training period |
| 90 percent | of the journeyman wage for the last quarter of the training period |

In no instance shall a trainee be paid less than the local minimum wage. The Contractor shall adhere to the minimum hourly wage rate that will satisfy both the NC Department of Labor (NCDOL) and the Department.

Achieving or Failing to Meet Training Goals

The Contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and who receives training for at least 50 percent of the specific program requirement. Trainees will be allowed to be transferred between projects if required by the Contractor's scheduled workload to meet training goals.

If a contractor fails to attain their training assignments for the calendar year, they may be taken off the NCDOT's Bidders List.

Measurement and Payment

No compensation will be made for providing required training in accordance with these contract documents.

STANDARD SPECIAL PROVISION

NAME CHANGE FOR NCDENR

(1-19-16) Z-11

Description

Wherever in the 2012 Standard Specifications, Project Special Provisions, Standard Special Provisions, Permits or Plans that reference is made to "NCDENR" or "North Carolina Department of Environment and Natural Resources", replace with "NCDEQ" or "North Carolina Department of Environmental Quality" respectively, as the case may be.

STANDARD SPECIAL PROVISION MINIMUM WAGES GENERAL DECISION NC170104 01/06/2017 NC104

Z-104

Date: January 6, 2017

General Decision Number: NC170104 01/06/2017 NC104

Superseded General Decision Numbers: NC20160104

State: North Carolina

Construction Type: HIGHWAY

COUNTIES:

| Beaufort | Granville | Pasquotank |
|----------|-------------|------------|
| Bertie | Halifax | Perquimans |
| Bladen | Harnett | Robeson |
| Camden | Hertford | Sampson |
| Carteret | Hyde | Scotland |
| Chowan | Jones | Tyrrell |
| Columbus | Lenoir | Vance |
| Craven | Martin | Warren |
| Dare | Northampton | Washington |
| Duplin | Pamlico | Wilson |
| Gates | | |

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.20 for calendar year 2017 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract for calendar year 2017. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number 0

Publication Date 01/06/2017

SUNC2014-006 11/17/2014

| | 30 | NC2014-006 11/1// |
|--------------------------------|-------|-------------------|
| | Rates | Fringes |
| BLASTER | 21.85 | |
| CARPENTER | 13.72 | |
| CEMENT MASON/CONCRETE FINISHER | 14.26 | |
| ELECTRICIAN | | |
| Electrician | 18.69 | 2.66 |
| Telecommunications Technician | 14.72 | 1.67 |

| | Rates | Fringes |
|---|-------|---------|
| IRONWORKER | 16.32 | |
| LABORER | | |
| Asphalt Raker and Spreader | 12.42 | |
| Asphalt Screed/Jackman | 13.48 | |
| Carpenter Tender | 10.85 | |
| Cement Mason/Concrete Finisher Tender | 11.35 | |
| Common or General | 10.12 | |
| Guardrail/Fence Installer | 13.39 | |
| Pipelayer | 13.31 | |
| Traffic Signal/Lighting Installer | 16.88 | |
| PAINTER | 10,00 | |
| Bridge | 19.62 | |
| POWER EQUIPMENT OPERATORS | 17.02 | |
| Asphalt Broom Tractor | 13.28 | |
| Bulldozer Fine | 18.46 | |
| Bulldozer Rough | 14.09 | |
| Concrete Grinder/Groover | 24.66 | |
| Crane Boom Trucks | 17.25 | |
| Crane Other | 21.48 | |
| Crane Other Crane Rough/All-Terrain | 19.00 | |
| Drill Operator Rock | 15.43 | 1.61 |
| <u> </u> | 19.12 | 1.01 |
| Drill Operator Structure | | |
| Excavator Fine | 17.61 | |
| Excavator Rough | 12.99 | |
| Grader/Blade Fine | 16.73 | |
| Grader/Blade Rough | 15.28 | |
| Loader 2 Cubic Yards or Less | 10.28 | |
| Loader Greater Than 2 Cubic Yards | 13.58 | |
| Material Transfer Vehicle (Shuttle Buggy) | 17.39 | |
| Mechanic | 18.63 | |
| Milling Machine | 14.38 | |
| Off-Road Hauler/Water Tanker | 9.30 | |
| Oiler/Greaser | 13.45 | |
| Pavement Marking Equipment | 11.87 | |
| Paver Asphalt | 15.53 | |
| Roller Asphalt Breakdown | 12.13 | |
| Roller Asphalt Finish | 13.65 | |
| Roller Other | 10.48 | |
| Scraper Finish | 13.98 | |
| Scraper Rough | 10.17 | |
| Slip Form Machine | 19.29 | |
| Tack Truck/Distributor Operator | 14.56 | |
| TRUCK DRIVER | | |
| GVWR of 26,000 Lbs or Less | 10.35 | |
| GVWR of 26,000 Lbs or Greater | 12.04 | |

Welders – Receive rate prescribed for craft performing operation to which welding is incidental.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work,

up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union

average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

- 1.) Has there been an initial decision in the matter? This can be:
 - * an existing published wage determination
 - * a survey underlying a wage determination
 - * a Wage and Hour Division letter setting forth a position on a wage determination matter
 - * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations Wage and Hour Division U. S. Department of Labor 200 Constitution Avenue, N.W. Washington, D.C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, D.C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, D.C. 20210

4.) All decisions by the Administrative Review Board are final.

PROJECT SPECIAL PROVISIONS

GEOTECHNICAL

| SPECIAL HANDLING OF UNCLASSIFIED EXCAVATION (SPECIAL) | GT-1.1 | - GT-1.2 |
|---|--------|-----------|
| MECHANICALLY STABILIZED EARTH RETAINING WALLS (SPECIAL) | GT-2.1 | - GT-2.10 |
| PILES (LRFD) - (5/16/2017) | GT-3.1 | - GT-3.3 |
| STANDARD SHORING - (3/17/2015) | GT-4.1 | - GT-4.4 |



SPECIAL HANDLING OF UNCLASSIFIED EXCAVATION

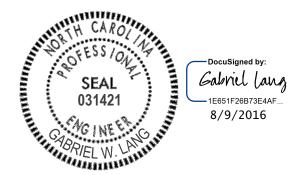
(SPECIAL)

1.0 GENERAL

Use any suitable unclassified excavation material removed from the excavation from the stations listed below in accordance with NCDOT Standard Specification 225, except the material shall not be used in the top 3 feet of the proposed embankment or backfill. These soils may be utilized in areas outside the pavement section or in lower portions of high fills at the discretion of the Engineer.

Stations

| <u>Line</u> | Stations (±) | Offsets (ft) |
|-------------|------------------|--------------|
| -L- | 61+35 to 66+40 | LT to RT |
| -L- | 67+75 to 69+25 | LT |
| -L- | 69+70 to 73+25 | RT |
| -L- | 78+25 to 78+75 | RT |
| -L- | 81+25 to 91+95 | LT to RT |
| -L- | 96+75 to 98+25 | RT |
| -L- | 98+75 to 99+25 | RT |
| -L- | 100+75 to 101+75 | RT |
| -L- | 102+75 to 107+70 | LT to RT |
| -L- | 108+25 to 108+75 | LT to RT |
| -L- | 109+25 to 111+95 | LT to RT |
| -L- | 112+60 to 115+40 | LT to RT |
| -L- | 117+65 to 119+90 | 90 RT |
| -LRA- | 10+00 to 13+75 | 66 RT |
| -LRB- | 11+44 to 14+75 | LT to RT |
| -LRB- | 19+35 to 22+58 | LT to RT |
| -YEB01- | 8+40 to 16+90 | LT to RT |
| -YEB01- | 18+40 to 21+25 | LT to RT |
| -YEB01- | 41+00 to 50+00 | LT to RT |
| -YEB01- | 50+65 to 52+05 | LT to RT |
| -YEB01- | 53+75 to 59+74 | LT to RT |
| -YWB01- | 16+70 to 19+96 | RT |
| -YWB01- | 20+92 to 22+70 | LT |
| -YWB01- | 31+25 to 32+75 | LT to RT |
| -YWB01- | 34+25 to 35+25 | LT |
| -Y09A- | 10+85 to 19+30 | LT to RT |
| -Y09A- | 19+80 to 20+25 | RT |
| -Y09A- | 24+55 to 25+45 | LT to RT |
| -Y10A- | 15+15 to 15+95 | LT to RT |
| -Y10A- | 16+35 to 18+15 | RT |
| -Y10A- | 26+75 to 27+55 | LT |
| -Y10A- | 35+45 to 37+75 | LT to RT |
| | | |



MECHANICALLY STABILIZED EARTH RETAINING WALLS

(SPECIAL)

1.0 GENERAL

Construct mechanically stabilized earth (MSE) retaining walls consisting of steel or geosynthetic reinforcement in the reinforced zone connected to vertical facing elements. Use precast concrete panels for vertical facing elements and coarse aggregate in the reinforced zone unless noted otherwise in the plans. Provide reinforced concrete coping as required. Design and construct MSE retaining walls based on actual elevations and wall dimensions in accordance with the contract and accepted submittals. Use a prequalified MSE Wall Installer to construct MSE retaining walls.

Define "reinforcement" as steel or geosynthetic reinforcement and "geosynthetics" as geosynthetic grids (geogrids) or strips (geostrips). Define "aggregate" as coarse or fine aggregate. Define "panel" as a precast concrete panel and "coping" as precast or cast-in-place concrete coping.

Define "MSE wall" as a mechanically stabilized earth retaining wall and "MSE Wall Vendor" as the vendor supplying the chosen MSE wall system. Define "MSE panel wall" as an MSE wall with panels. Define "abutment wall" as an MSE wall with bridge foundations in any portion of the reinforced zone or an MSE wall connected to an abutment wall. Even if bridge foundations only penetrate a small part of the reinforced zone, the entire MSE wall is considered an abutment wall.

Use an approved MSE wall system in accordance with the plans and any NCDOT restrictions or exceptions for the chosen system. Value engineering proposals for other MSE wall systems will not be considered. Do not use MSE wall systems with an "approved for provisional use" status for abutment walls or MSE walls subject to scour, walls with design heights greater than 35 ft or walls supporting or adjacent to railroads or interstate highways. The list of approved MSE wall systems with approval status is available from:

connect.ncdot.gov/resources/Geological/Pages/Products.aspx

2.0 MATERIALS

Refer to the *Standard Specifications*.

| Item | Section |
|-----------------------------------|---------|
| Aggregate | 1014 |
| Anchor Pins | 1056-2 |
| Curing Agents | 1026 |
| Epoxy, Type 3A | 1081 |
| Geotextiles, Type 2 | 1056 |
| Grout, Type 3 | 1003 |
| Joint Materials | 1028 |
| Portland Cement Concrete, Class A | 1000 |
| Precast Retaining Wall Coping | 1077 |
| Reinforcing Steel | 1070 |

| Retaining Wall Panels | 1077 |
|--------------------------|------------|
| Shoulder Drain Materials | 816-2 |
| Wire Staples | 1060-8(D) |
| Corrugated Steel Pipe | 1032-3(A7) |

Provide Type 2 geotextile for filtration and separation geotextiles. Use Class A concrete for cast-in-place coping, leveling concrete and pads.

Use panels from producers approved by the Department and licensed by the MSE Wall Vendor. Unless required otherwise in the contract, produce panels with a smooth flat final finish that meets Article 1077-11 of the *Standard Specifications*. Accurately locate and secure reinforcement connectors in panels and maintain required concrete cover. Produce panels within 1/4" of the panel dimensions shown in the accepted submittals.

Damaged panels with excessive discoloration, chips or cracks as determined by the Engineer will be rejected. Do not damage reinforcement connection devices or mechanisms in handling or storing panels.

Store steel materials on blocking at least 12" above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials. Handle and store geosynthetics in accordance with Article 1056-2 of the *Standard Specifications*. Load, transport, unload and store MSE wall materials so materials are kept clean and free of damage. Bent, damaged or defective materials will be rejected.

A. Aggregate

Use standard size No. 57, 57M, 67 or 78M that meets Table 1005-1 of the *Standard Specifications* for coarse aggregate except do not use No. 57 or 57M stone in the reinforced zone of MSE walls with geosynthetic reinforcement or connectors. Use the following for fine aggregate:

- 1. Standard size No. 1S, 2S, 2MS or 4S that meets Table 1005-2 of the *Standard Specifications* or
- 2. Gradation that meets Class III, Type 3 select material in accordance with Article 1016-3 of the *Standard Specifications*.

Fine aggregate is exempt from mortar strength in Subarticle 1014-1(E) of the *Standard Specifications*. Use fine aggregate with a maximum organic content of 1.0%. Provide aggregate with electrochemical properties that meet the following requirements:

| | | | | <u> </u> | |
|--|---|---|-------------|-----------|----------|
| AGGREGATE ELECTROCHEMICAL REQUIREMENTS | | | | | |
| Aggregate Type | Reinforcement or Connector Material | pН | Resistivity | Chlorides | Sulfates |
| Coarse | Steel | Not Required | | | |
| Fine | Steel | $5-10 \ge 3,000 \Omega \cdot \text{cm} \le 100 \text{ ppm} \le 200 \text{ pps}$ | | ≤ 200 ppm | |

| Coarse or Fine | Polyester Type (PET) Geogrid | 5 – 8 | N/A* | N/A* | N/A* |
|----------------|--------------------------------------|---------|------|------|------|
| Coarse or Fine | Geostrip or Polyolefin Geogrid | 4.5 – 9 | N/A* | N/A* | N/A* |

^{*} Resistivity, chlorides and sulfates are not applicable to geosynthetics.

Use aggregate from a source that meets the *Mechanically Stabilized Earth Wall Aggregate Sampling and Testing Procedures*. Perform pH tests for coarse aggregate in accordance with Materials and Tests (M&T) Unit Chemical Procedure C-Elec. Perform organic content tests for fine aggregate in accordance with AASHTO T 267 instead of Subarticle 1014-1(D) of the *Standard Specifications*. Perform electrochemical tests for fine aggregate in accordance with the following test procedures:

| Property | Test Method |
|-------------|--------------|
| рН | AASHTO T 289 |
| Resistivity | AASHTO T 288 |
| Chlorides | AASHTO T 291 |
| Sulfates | AASHTO T 290 |

B. Reinforcement

Provide steel or geosynthetic reinforcement supplied by the MSE Wall Vendor or a manufacturer approved or licensed by the vendor. Use reinforcement approved for the chosen MSE wall system. The list of approved reinforcement for each MSE wall system is available from the website shown elsewhere in this provision.

1. Steel Reinforcement

Provide Type 1 material certifications in accordance with Article 106-3 of the *Standard Specifications* for steel reinforcement. Use welded wire grid reinforcement ("mesh", "mats" and "ladders") that meet Article 1070-3 of the *Standard Specifications* and metallic strip reinforcement ("straps") that meet ASTM A572 or A1011. Galvanize steel reinforcement in accordance with Section 1076 of the *Standard Specifications*.

2. Geosynthetic Reinforcement

Define "machine direction" (MD) for geosynthetics in accordance with ASTM D4439. Provide Type 1 material certifications for geosynthetic strengths in the MD in accordance with Article 1056-3 of the *Standard Specifications*. Test geosynthetics in accordance with ASTM D6637.

C. Bearing Pads

For MSE panel walls, use bearing pads that meet Section 3.6.1.a of the FHWA Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes –

Volume I (Publication No. FHWA-NHI-10-024). Provide bearing pads with thicknesses that meet the following:

| BEARING PAD THICKNESS | | |
|---|------|--|
| Facing Area per Panel (A) Minimum Pad Thickness After Comp (based on 2 times panel weight above | | |
| $A \le 30 \text{ sf}$ | 1/2" | |
| $30 \text{ sf} < A \le 75 \text{ sf}$ | 3/4" | |

D. Miscellaneous Components

Miscellaneous components may include connectors (e.g., anchors, bars, clamps, pins, plates, ties, etc.), fasteners (e.g., bolts, nuts, washers, etc.) and any other MSE wall components not included above. Galvanize steel components in accordance with Section 1076 of the *Standard Specifications*. Provide miscellaneous components approved for the chosen MSE wall system. The list of approved miscellaneous components for each MSE wall system is available from the website shown elsewhere in this provision.

3.0 Preconstruction Requirements

A. MSE Wall Surveys

The Retaining Wall Plans show a plan view, typical sections, details, notes and an elevation or profile view (wall envelope) for each MSE wall. Before beginning MSE wall design, survey existing ground elevations shown in the plans and other elevations in the vicinity of MSE wall locations as needed. For proposed slopes above or below MSE walls, survey existing ground elevations to at least 10 ft beyond slope stake points. Based on these elevations, finished grades and actual MSE wall dimensions and details, submit revised wall envelopes for acceptance. Use accepted wall envelopes for design.

B. MSE Wall Designs

For MSE wall designs, submit 11 copies of working drawings and 3 copies of design calculations and a PDF copy of each at least 30 days before the preconstruction meeting. Note name and NCDOT ID number of the panel production facility on the working drawings. Do not begin MSE wall construction until a design submittal is accepted.

Use a prequalified MSE Wall Design Consultant to design MSE walls. Provide designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for the MSE Wall Design Consultant.

Design MSE walls in accordance with the plans, AASHTO LRFD Bridge Design Specifications and any NCDOT restrictions for the chosen MSE wall system unless otherwise required. Design MSE walls for seismic if walls are located in seismic zone

2 based on Figure 2-1 of the *Structure Design Manual*. Use a uniform reinforcement length throughout the wall height of at least 0.7H with H as shown in the plans or 6 ft, whichever is longer, unless noted otherwise in the plans. Extend the reinforced zone at least 6" beyond end of reinforcement. Do not locate drains, the reinforced zone or leveling pads outside right-of-way or easement limits.

Use the simplified method for determining maximum reinforcement loads and design parameters approved for the chosen MSE wall system or default values in accordance with the AASHTO LRFD specifications. Design steel components including reinforcement and connectors for the design life noted in the plans and aggregate type in the reinforced zone. Use corrosion loss rates for galvanizing in accordance with the AASHTO LRFD specifications for nonaggressive backfill and carbon steel corrosion rates in accordance with the following:

| CARBON STEEL CORROSION RATES | | | |
|-------------------------------------|--|--|--|
| Aggregate Type (in reinforced zone) | Corrosion Loss Rate (after zinc depletion) | | |
| Coarse | 0.47 mil/year | | |
| Fine (except abutment walls) | 0.58 mil/year | | |
| Fine (abutment walls) | 0.70 mil/year | | |

For geosynthetic reinforcement and connectors, use approved geosynthetic properties for the design life noted in the plans and aggregate type in the reinforced zone.

When noted in the plans, design MSE walls for a live load (traffic) surcharge of 250 lb/sf in accordance with Figure C11.5.6-3(b) of the AASHTO LRFD specifications. For steel beam guardrail with 8 ft posts or concrete barrier rail above MSE walls, analyze top 2 reinforcement layers for traffic impact loads in accordance with Section 7.2 of the FHWA MSE wall manual shown elsewhere in this provision except use the following for geosynthetic reinforcement rupture:

$$\varphi \: T_{al} \: R_c \geq T_{max} + (T_I \: / \: RF_{CR})$$

Where,

φ = resistance factor for tensile resistance in accordance with Section 7.2.1 of the FHWA MSE wall manual,

 T_{al} = long-term geosynthetic design strength approved for chosen MSE wall system.

R_c = reinforcement coverage ratio = 1 for continuous geosynthetic reinforcement.

 T_{max} = factored static load in accordance with Section 7.2 of the FHWA MSE wall manual.

T_I = factored impact load in accordance with Section 7.2 of the FHWA MSE wall manual and

RF_{CR} = creep reduction factor approved for chosen MSE wall system.

If existing or future obstructions such as foundations, guardrail, fence or handrail posts, moment slabs, pavements, pipes, inlets or utilities will interfere with reinforcement, maintain a clearance of at least 3" between obstructions and reinforcement unless

otherwise approved. Locate reinforcement layers so all of reinforcement length is within 3" of corresponding connection elevations.

Use 6" thick cast-in-place unreinforced concrete leveling pads beneath panels that are continuous at steps and extend at least 6" in front of and behind bottom row of panels. Unless required otherwise in the plans, embed top of leveling pads in accordance with the following requirements:

| EMBEDMENT REQUIREMENTS | | | | |
|--|---|--|--|--|
| Front Slope ¹ (H:V) | Minimum Embedment Depth ² (whichever is greater) | | | |
| 6:1 or flatter (except abutment walls) | H/20 | 1 ft for $H \le 10$ ft 2 ft for $H > 10$ ft | | |
| 6:1 or flatter (abutment walls) | H/10 | 2 ft | | |
| > 6:1 to < 3:1 | H/10 | 2 ft | | |
| 3:1 to 2:1 | H/7 | 2 ft | | |

- 1. Front slope is as shown in the plans.
- 2. Define "H" as the maximum design height plus embedment per wall with the design height and embedment as shown in the plans.

When noted in the plans, locate a continuous aggregate shoulder drain along the base of the reinforced zone behind the aggregate. Provide wall drainage systems consisting of drains and outlet components in accordance with Standard Drawing No. 816.02 of the *Roadway Standard Drawings*.

For MSE panel walls, cover joints at back of panels with filtration geotextiles at least 12" wide. If the approval of the chosen MSE wall system does not require a minimum number of bearing pads, provide the number of pads in accordance with the following:

| NUMBER OF BEARING PADS | | | | |
|---------------------------------------|--|---|--|--|
| Facing Area per Panel (A) | Maximum Wall Height Above Horizontal Panel Joint | Minimum Number of Pads per Horizontal Panel Joint | | |
| $A \le 30 \text{ sf}$ | 25 ft | 2 | | |
| | 35 ft ¹ | 3 | | |
| $30 \text{ sf} < A \le 75 \text{ sf}$ | 25 ft | 3 | | |
| | 35 ft ¹ | 4 | | |

1. Additional bearing pads per horizontal panel joint may be required for wall heights above joints greater than 35 ft.

Separation geotextiles are required between the aggregate and overlying fill or pavement sections except when concrete pavement, full depth asphalt or cement treated base is placed directly on aggregate. When noted in the plans, separation geotextiles are also required at the back of the reinforced zone between the aggregate and backfill or natural ground. Unless required otherwise in the plans, use reinforced concrete

coping at top of walls that meets the following requirements:

- 1. Coping dimensions as shown in the plans,
- 2. At the Contractor's option, coping that is precast or cast-in-place concrete for MSE panel walls unless cast-in-place coping is required as shown in the plans,
- 3. Cast-in-place concrete coping for MSE segmental walls and
- 4. At the Contractor's option and when shown in the plans, cast-in-place concrete coping that extends down back of panels or connects to panels with dowels.

For MSE panel walls with coping, connect cast-in-place concrete coping or leveling concrete for precast concrete coping to top row of panels with dowels cast into panels. When concrete barrier rail is required above MSE walls, use concrete barrier rail with moment slab as shown in the plans.

Submit working drawings and design calculations for acceptance in accordance with Article 105-2 of the Standard Specifications. Submit working drawings showing plan views, wall profiles with foundation pressures, typical sections with reinforcement and connection details, aggregate locations and types, geotextile locations and details of leveling pads, panels, coping, bin walls, slip joints, etc. If necessary, include details on working drawings for concrete barrier rail with moment slab, reinforcement splices if allowed for the chosen MSE wall system, reinforcement connected to end bent caps and obstructions extending through walls or interfering with reinforcement, leveling pads, barriers or moment slabs. Submit design calculations for each wall section with different surcharge loads, geometry or material parameters. At least one analysis is required for each wall section with different reinforcement lengths. When designing MSE walls with computer software other than MSEW, use MSEW, version 3.0 with update 14.93 or later, manufactured by ADAMA Engineering, Inc. to verify the design. At least one MSEW analysis is required per 100 ft of wall length with at least one analysis for the wall section with the longest reinforcement. Submit electronic MSEW input files and PDF output files with design calculations.

C. Preconstruction Meeting

Before starting MSE wall construction, hold a preconstruction meeting to discuss the construction and inspection of the MSE walls. If this meeting occurs before all MSE wall submittals have been accepted, additional preconstruction meetings may be required before beginning construction of MSE walls without accepted submittals. The Resident or Bridge Maintenance Engineer, Bridge Construction Engineer, Geotechnical Operations Engineer, Contractor and MSE Wall Installer Superintendent will attend preconstruction meetings.

4.0 CORROSION MONITORING

Corrosion monitoring is required for MSE walls with steel reinforcement. The Engineer will determine the number of monitoring locations and where to install the instrumentation. Contact M&T before beginning wall construction. M&T will provide the corrosion monitoring instrumentation kits and if necessary, assistance with installation.

5.0 SITE ASSISTANCE

Unless otherwise approved, provide an MSE Wall Vendor representative to assist and guide the MSE Wall Installer on-site for at least 8 hours when the first panels and reinforcement layer are placed. If problems are encountered during construction, the Engineer may require the vendor representative to return to the site for a time period determined by the Engineer.

6.0 Construction Methods

Control drainage during construction in the vicinity of MSE walls. Direct run off away from MSE walls, aggregate and backfill. Contain and maintain aggregate and backfill and protect material from erosion.

Excavate as necessary for MSE walls in accordance with the accepted submittals. If applicable and at the Contractor's option, use temporary shoring for wall construction instead of temporary slopes to construct MSE walls. Define "temporary shoring for wall construction" as temporary shoring not shown in the plans or required by the Engineer including shoring for OSHA reasons or the Contractor's convenience.

When noted in the plans, install corrugated steel pipes for end bent pile location located in the reinforced zone before placing aggregate or reinforcement. Top of pipes should be 3" below the bottom of the cap elevation. Brace pipes or piles in the reinforced zone to maintain alignment when placing and compacting aggregate. Secure piles together with steel members near top of piles. Clamp members to piles instead of welding if bracing is at or below pile cut-off elevations.

Notify the Engineer when foundation excavation is complete. Do not place leveling pad concrete, aggregate or reinforcement until excavation dimensions and foundation material are approved.

Construct cast-in-place concrete leveling pads at elevations and with dimensions shown in the accepted submittals and in accordance with Section 420 of the *Standard Specifications*. Cure leveling pads at least 24 hours before placing panels.

Erect and support panels so the final wall position is as shown in the accepted submittals. Space bearing pads in horizontal panel joints as shown in the accepted submittals and cover all panel joints with filtration geotextiles as shown in the accepted submittals. Attach filtration geotextiles to back of panels with adhesives, tapes or other approved methods.

Construct MSE walls with the following tolerances:

- A. Vertical joint widths are 3/4", $\pm 1/4$ " for panels,
- B. Final wall face is within 3/4" of horizontal and vertical alignment shown in the accepted submittals when measured along a 10 ft straightedge and
- C. Final wall plumbness (batter) is not negative (wall face leaning forward) and within 0.5° of vertical unless otherwise approved.

Place reinforcement at locations and elevations shown in the accepted submittals and within 3" of corresponding connection elevations. Install reinforcement with the direction shown in the accepted submittals. Place reinforcement in slight tension free of kinks, folds, wrinkles or creases. Reinforcement may be spliced once per reinforcement length if shown in the accepted submittals. Use reinforcement pieces at least 6 ft long. Contact the Engineer when unanticipated existing or future obstructions such as foundations, guardrail, fence or handrail posts, pavements, pipes, inlets or utilities will interfere with reinforcement. To avoid obstructions, deflect, skew or modify reinforcement as shown in the accepted submittals.

Place aggregate in the reinforced zone in 8" to 10" thick lifts. Compact fine aggregate in accordance with Subarticle 235-3(C) of the *Standard Specifications*. Use only hand operated compaction equipment to compact aggregate within 3 ft of panels. At a distance greater than 3 ft, compact aggregate with at least 4 passes of an 8 ton to 10 ton vibratory roller in a direction parallel to the wall face. Smooth wheeled or rubber tired rollers are also acceptable for compacting aggregate. Do not use sheepsfoot, grid rollers or other types of compaction equipment with feet. Do not displace or damage reinforcement when placing and compacting aggregate. End dumping directly on geosynthetics is not permitted. Do not operate heavy equipment on reinforcement until it is covered with at least 8" of aggregate. Replace any damaged reinforcement to the satisfaction of the Engineer.

Backfill for MSE walls outside the reinforced zone in accordance with Article 410-8 of the *Standard Specifications*. If a drain is required, install wall drainage systems as shown in the accepted submittals and in accordance with Section 816 of the *Standard Specifications*.

Construct leveling concrete in accordance with Section 420 of the *Standard Specifications*. Construct cast-in-place concrete coping in accordance with Subarticle 452-3(C) of the *Standard Specifications*. When single faced precast concrete barrier is required in front of and against MSE walls, stop coping just above barrier so coping does not interfere with placing barrier up against wall faces.

When separation geotextiles are required, overlap adjacent geotextiles at least 18" and hold separation geotextiles in place with wire staples or anchor pins as needed. Seal joints above and behind MSE walls between coping and concrete slope protection with silicone sealant.

7.0 MEASUREMENT AND PAYMENT

MSE Retaining Wall No. __ will be measured and paid in square feet. MSE walls will be measured as the square feet of wall face area with the pay height equal to the difference between top of wall and top of leveling pad elevations. Define "top of wall" as top of coping or top of panels for MSE walls without coping.

The contract unit price for MSE Retaining Wall No. __ will be full compensation for providing designs, submittals, labor, tools, equipment and MSE wall materials, excavating, backfilling, hauling and removing excavated materials and supplying site assistance,

leveling pads, panels, reinforcement, aggregate, wall drainage systems, geotextiles, bearing pads, coping, 16 gauge 24 inch diameter corrugated steel pipe, miscellaneous components and any incidentals necessary to construct MSE walls. The contract unit price for *MSE Retaining Wall No.* __ will also be full compensation for reinforcement connected to and aggregate behind end bent caps in the reinforced zone, if required.

No separate payment will be made for temporary shoring for wall construction. Temporary shoring for wall construction will be incidental to the contract unit price for *MSE Retaining Wall No.* ___.

The contract unit price for MSE Retaining Wall No. __ does not include the cost for ditches, fences, handrails, barrier or guardrail associated with MSE walls as these items will be paid for elsewhere in the contract.

Where it is necessary to provide backfill material behind the reinforced zone from sources other than excavated areas or borrow sources used in connection with other work in the contract, payment for furnishing and hauling such backfill material will be paid as extra work in accordance with Article 104-7 of the *Standard Specifications*. Placing and compacting such backfill material is not considered extra work but is incidental to the work being performed.

Payment will be made under:

Pay Item
MSE Retaining Wall No. ___

Pay Unit Square Foot



<u>PILES</u> (5-16-17)

Revise the 2012 Standard Specifications as follows:

Page 4-70, Article 450-2, Materials, line 2, in the materials table, replace "Neat Cement Grout, Nonshrink" with "Neat Cement Grout, Type 1".

Page 4-70, Article 450-2, Materials, line 8, in the last sentence of the second paragraph, replace "approved by the Materials and Tests Unit." with "that are on the NCDOT Approved Products List."

Page 4-71, Subarticle 450-3(D), Driven Piles, line 10, add the following after the first sentence of the third paragraph.

Use AASHTO driving stress limits for severe corrosive environments when calcium nitrite corrosion inhibitor is required for prestressed concrete piles.

Page 4-72, Subarticle 450-3(D)(3), Required Driving Resistance, lines 26-30, replace first paragraph with the following:

The Engineer will determine if the proposed pile driving methods and equipment are acceptable and provide the blows/ft and equivalent set for the required driving resistance noted in the plans, i.e., "pile driving criteria" except for structures with pile driving analyzer (PDA) testing. For structures with PDA testing, provide pile driving criteria for any bents and end bents with piles in accordance with Subarticle 450-3(F)(4).

Page 4-73, Subarticle 450-3(E)(1), Pile Excavation, lines 19-20, in the third sentence of the second paragraph, replace "use smooth or corrugated clean watertight steel casings" with "use smooth non-corrugated clean watertight steel casings".

Page 4-73, Subarticle 450-3(F), Pile Driving Analyzer, lines 45-48, replace third paragraph with the following:

The Engineer will complete the review of the proposed pile driving methods and equipment within 7 days of receiving PDA reports and pile driving criteria. Do not place concrete for caps or footings on piles until PDA reports and pile driving criteria have been accepted.

Page 4-75, Subarticle 450-3(F), Pile Driving Analyzer, line 21, add the following to the end of Article 450-3:

(4) Pile Driving Criteria

Analyze pile driving with the GRL Wave Equation Analysis Program (GRLWEAP) manufactured by Pile Dynamics, Inc. Use the same PDA Consultant that provides PDA reports to perform GRLWEAP analyses and develop pile driving criteria. Provide driving criteria sealed by an engineer approved as a Project Engineer (key person) for the

same PDA Consultant.

Analyze pile driving so driving stresses, energy transfer, ram stroke and blows/ft from PDA testing and resistances from CAPWAP analyses correlate to GRLWEAP models. Provide pile driving criteria for each combination of required driving resistance and pile length installed for all pile types and sizes. Submit 2 copies of pile driving criteria with PDA reports. Include the following for driving criteria:

- (a) Project information in accordance with Subarticle 450-3(F)(3)(a)
- (b) Table showing blows/ft and equivalent set vs. either stroke for multiple strokes in increments of 6" or bounce chamber pressure for multiple pressures in increments of 1 psi
- (c) Maximum stroke or blows/ft or pile cushion requirements to prevent overstressing piles as needed
- (d) GRLWEAP software version information
- (e) PDF copy of all pile driving criteria and executable GRLWEAP input and output files

Page 4-75, Article 450-4, Measurement and Payment, line 24, add the following after the first paragraph:

| Pile Driving Equipment Setup for Prestressed Concrete Piles, Pile Driving Equipment |
|--|
| Setup for Steel Piles and Pile Driving Equipment Setup for Galvanized Steel Piles |
| will be measured and paid in units of each. Setting up equipment to drive piles will be measured |
| as one per pile. No payment will be made for pile driving equipment setup for installed piles that |
| are not driven. The contract unit price for Pile Driving Equipment Setup for Prestressed |
| Concrete Piles, Pile Driving Equipment Setup for Steel Piles and Pile Driving Equipment |
| Setup for Galvanized Steel Piles will be full compensation for mobilizing and demobilizing |
| pile driving equipment, personnel, supplies and incidentals, setting up and breaking down pile |
| driving equipment, e.g., pile hammer, crane, template, etc. and submitting the proposed pile |
| driving methods and equipment. |

Page 4-75, Article 450-4, Measurement and Payment, line 31, in the fifth sentence of the second paragraph, replace "driving piles" with "furnishing and installing piles except for the items paid for separately in this article"

Page 4-76, Article 450-4, Measurement and Payment, lines 27-29, replace third sentence of the sixth paragraph with the following:

The contract unit price for *PDA Testing* will be full compensation for performing PDA testing the first time a pile is tested, performing CAPWAP analysis on data collected during initial drive, restrikes and redrives, providing PDA reports, performing GRLWEAP analysis and developing and providing pile driving criteria.

Page 4-76, Article 450-4, Measurement and Payment, line 33, add the following after the list headings:

Each

Pay Unit Pay Item Pile Driving Equipment Setup for _____ Prestressed Concrete Piles Each Pile Driving Equipment Setup for ____ Steel Piles
Pile Driving Equipment Setup for ____ Galvanized Steel Piles Each

DocuSigned by: Scott a. Hidden F760CAEB96FC4D3... 3/7/2017

STANDARD SHORING:

(3-17-15)

Description

Standard shoring includes standard temporary shoring and standard temporary mechanically stabilized earth (MSE) walls. At the Contractor's option, use standard shoring as noted in the plans or as directed. When using standard shoring, a temporary shoring design submittal is not required. Construct standard shoring based on actual elevations and shoring dimensions in accordance with the contract and Standard Detail No. 1801.01 or 1801.02.

Define "standard temporary shoring" as cantilever shoring that meets the standard temporary shoring detail (Standard Detail No. 1801.01). Define "standard temporary wall" as a temporary MSE wall with geotextile or geogrid reinforcement that meets the standard temporary wall detail (Standard Detail No. 1801.02). Define "standard temporary geotextile wall" as a standard temporary wall with geotextile reinforcement and "standard temporary geogrid wall" as a standard temporary wall with geogrid reinforcement. Define "geosynthetics" as geotextiles or geogrids.

Provide positive protection for standard shoring at locations shown in the plans and as directed. See *Temporary Shoring* provision for positive protection types and definitions.

Materials

Refer to the Standard Specifications.

| Item | Section |
|--------------------------------|-----------|
| Anchor Pins | 1056-2 |
| Concrete Barrier Materials | 1170-2 |
| Flowable Fill, Excavatable | 1000-6 |
| Geotextiles | 1056 |
| Grout, Type 1 | 1003 |
| Portland Cement Concrete | 1000 |
| Select Material | 1016 |
| Steel Beam Guardrail Materials | 862-2 |
| Steel Sheet Piles and H-Piles | 1084 |
| Untreated Timber | 1082-2 |
| Welded Wire Reinforcement | 1070-3 |
| Wire Staples | 1060-8(D) |

Provide Type 6 material certifications for shoring materials. Use Class IV select material (standard size No. ABC) for temporary guardrail. Use Class A concrete that meets Article 450-2 of the *Standard Specifications* or grout for drilled-in piles.

Based on actual shoring height, positive protection, groundwater elevation, slope or surcharge case and traffic impact at each standard temporary shoring location, use sheet piles with the minimum required section modulus or H-piles with the sizes shown in Standard Detail No. 1801.01. Use untreated timber with a thickness of at least 3" and a bending stress of at least 1,000 psi for timber lagging.

(A) Shoring Backfill

Use Class II, Type 1, Class III, Class V or Class VI select material or material that meets

AASHTO M 145 for soil classification A-2-4 with a maximum PI of 6 for shoring backfill except do not use the following:

- (1) A-2-4 soil for backfill around culverts,
- (2) A-2-4 soil in the reinforced zone of standard temporary walls with a back slope and
- (3) Class VI select material in the reinforced zone of standard temporary geotextile walls.

(B) Standard Temporary Walls

Use welded wire reinforcement for welded wire facing, struts and wires with the dimensions and minimum wire sizes shown in Standard Detail No. 1801.02. Provide Type 2 geotextile for separation and retention geotextiles. Define "machine direction" (MD) and "cross-machine direction" (CD) for geosynthetics in accordance with ASTM D4439. Do not use more than 4 different reinforcement strengths for each standard temporary wall.

(1) Geotextile Reinforcement

Provide Type 5 geotextile for geotextile reinforcement with a mass per unit area of at least 8 oz/sy in accordance with ASTM D5261. Based on actual wall height, groundwater elevation, slope or surcharge case and shoring backfill to be used in the reinforced zone at each standard temporary geotextile wall location, provide geotextiles with ultimate tensile strengths as shown in Standard Detail No. 1801.02.

(2) Geogrid Reinforcement

Handle and store geogrids in accordance with Article 1056-2 of the *Standard Specifications*. Use geogrids with a roll width of at least 4 ft and an "approved" or "approved for provisional use" status code. The list of approved geogrids is available from:

connect.ncdot.gov/resources/Materials/Pages/SoilsLaboratory.aspx

Based on actual wall height, groundwater elevation, slope or surcharge case and shoring backfill to be used in the reinforced zone at each standard temporary geogrid wall location, provide geogrids for geogrid reinforcement with short-term design strengths as shown in Standard Detail No. 1801.02. Geogrids are typically approved for ultimate tensile strengths in the MD and CD or short-term design strengths for a 3-year design life in the MD based on material type. Define material type from the website above for shoring backfill as follows:

| Material Type | Shoring Backfill |
|------------------|---|
| Borrow | A-2-4 Soil |
| Fine Aggregate | Class II, Type 1 or Class III Select Material |
| Coarse Aggregate | Class V or VI Select Material |

If the website does not list a short-term design strength for an approved geogrid, use a short-term design strength equal to the ultimate tensile strength divided by

3.5 for the geogrid reinforcement.

Preconstruction Requirements

(A) Concrete Barrier

Define "clear distance" behind concrete barrier as the horizontal distance between the barrier and edge of pavement. The minimum required clear distance for concrete barrier is shown in the plans. At the Contractor's option or if the minimum required clear distance is not available, set concrete barrier next to and up against traffic side of standard shoring except for barrier above standard temporary walls. Concrete barrier with the minimum required clear distance is required above standard temporary walls.

(B) Temporary Guardrail

Define "clear distance" behind temporary guardrail as the horizontal distance between guardrail posts and standard shoring. At the Contractor's option or if clear distance for standard temporary shoring is less than 4 ft, attach guardrail to traffic side of shoring as shown in the plans. Place ABC in clear distance and around guardrail posts instead of pavement. Do not use temporary guardrail above standard temporary walls.

(C) Standard Shoring Selection Forms

Before beginning standard shoring construction, survey existing ground elevations in the vicinity of standard shoring locations to determine actual shoring or wall heights (H). Submit a standard shoring selection form for each location at least 7 days before starting standard shoring construction. Standard shoring selection forms are available from: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx

(D) Preconstruction Meeting

The Engineer may require a shoring preconstruction meeting to discuss the construction and inspection of the standard shoring. If required, schedule this meeting after all standard shoring selection forms have been submitted. The Resident, District or Bridge Maintenance Engineer, Bridge or Roadway Construction Engineer, Geotechnical Operations Engineer, Contractor and Shoring Contractor Superintendent will attend this preconstruction meeting.

Construction Methods

Construct standard shoring in accordance with the *Temporary Shoring* provision.

(A) Standard Temporary Shoring Installation

Based on actual shoring height, positive protection, groundwater elevation, slope or surcharge case and traffic impact at each standard temporary shoring location, install piles with the minimum required embedment and extension for each shoring section in accordance with Standard Detail No. 1801.01. For concrete barrier above and next to standard temporary shoring and temporary guardrail above and attached to standard temporary shoring, use "surcharge case with traffic impact" in accordance with Standard Detail No. 1801.01. Otherwise, use "slope or surcharge case with no traffic impact" in accordance with Standard Detail No. 1801.01. If refusal is reached before driven piles attain the minimum required embedment, use drilled-in H-piles with timber lagging for standard temporary shoring.

(B) Standard Temporary Walls Installation

Based on actual wall height, groundwater elevation, slope or surcharge case, geotextile or geogrid reinforcement and shoring backfill in the reinforced zone at each standard temporary wall location, construct walls with the minimum required reinforcement length and number of reinforcement layers for each wall section in accordance with Standard Detail No. 1801.02. For standard temporary walls with pile foundations in the reinforced zone, drive piles through reinforcement after constructing temporary walls.

For standard temporary walls with interior angles less than 90°, wrap geosynthetics at acute corners as directed by the Engineer. Place geosynthetics as shown in Standard Detail No. 1801.02. Place separation geotextiles between shoring backfill and backfill, natural ground or culverts along the sides of the reinforced zone perpendicular to the wall face. For Class V or VI select material in the reinforced zone, place separation geotextiles between shoring backfill and backfill or natural ground on top of and at the back of the reinforced zone.

Measurement and Payment

Standard shoring will be measured and paid in accordance with the *Temporary Shoring* provision.



PROJECT SPECIAL PROVISIONS GEOENVIRONMENTAL

BROWNFIELD PROPERTY REQUIREMENTS (5/19/2017)

The Contractor's attention is directed to the fact that Parcel 18, City of Havelock Property, is a Brownfield Property regulated by the North Carolina Department of Environmental Quality (NCDEQ) henceforth referred to as "The Property". As such, all soil and artificial fill exported or imported from The Property must be managed according to Brownfield regulations.

Information relating to The Property, the area of Unsuitable Artificial Fill Material, sample locations, and investigation reports will be available from the Engineer and/or at the following web address by navigating to the correct letting year and month then selecting, "Plans and Proposals", "R5516", "GeoEnv Postings":

http://dotw-xfer01.dot.state.nc.us/dsplan/

The Unsuitable Artificial Fill within the right of way and easements of The Property will be removed by others prior to construction. The Department will provide an Environmental Management Plan (EMP) to the NCDEQ, per their requirements. The EMP must be approved by NCDEQ in advance of any work on The Property by the contractor. The Department's Specialty Consultant must sample the borrow fill soil for contaminants and receive approval by NCDEQ in advance of delivery to The Property. The Department requires one month notice from the Contractor to perform the borrow testing and obtain NCDEQ's approval. Rip rap to be placed within The Property shall not be comprised of recycled concrete, unless tested for contamination and approved in advance by NCDEQ.





TIP # R-5516 SN-1 Craven County



OVERHEAD AND DYNAMIC MESSAGE SIGN FOUNDATIONS

Description

Sign foundations include foundations for overhead and dynamic message signs (DMS) supported by metal poles or upright trusses. Sign foundations consist of footings with pedestals or drilled piers with or without grade beams or wings, conduit and anchor rod assemblies. Construct sign foundations in accordance with the contract and accepted submittals. Define "cantilever sign" as an overhead cantilever sign support in accordance with Figure 1-1 of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

Materials

Use sign foundation materials that meet the *Foundations and Anchor Rod Assemblies for Metal Poles* provision.

Assumed Subsurface Conditions

Assume the following soil parameters and groundwater elevation for sign foundations unless these subsurface conditions are not applicable to sign locations:

- (A) Unit weight (y) = 120 lb/cf,
- (B) Friction angle (ϕ) = 30°,
- (C) Cohesion (c) = 0 lb/sf and
- (D) Groundwater 7 ft below finished grade.

A subsurface investigation is required if the Engineer determines these assumed subsurface conditions do not apply to a sign location and the sign cannot be moved. Subsurface conditions requiring a subsurface investigation include but are not limited to weathered or hard rock, boulders, very soft or loose soil, muck or shallow groundwater. No extension of completion date or time will be allowed for subsurface investigations.

TIP # R-5516 SN-2 Craven County

Subsurface Investigations

Use a prequalified geotechnical consultant to perform one standard penetration test (SPT) boring in accordance with ASTM D1586 at each sign location requiring a subsurface investigation. Rough grade sign locations to within 2 feet of finished grade before beginning drilling. Drill borings to 2 drilled pier diameters below anticipated pier tip elevations or refusal, whichever is higher.

Use the computer software gINT version V8i or later manufactured by Bentley Systems, Inc. with the current NCDOT gINT library and data template to produce SPT boring logs. Provide boring logs sealed by a geologist or engineer licensed in the state of North Carolina.

Sign Foundation Designs

Design sign foundations for the wind zone and clearances shown in the plans and the slope of finished grade at each sign location. Use the assumed soil parameters and groundwater elevation above for sign foundation designs unless a subsurface investigation is required. For sign locations requiring a subsurface investigation, design sign foundations for the subsurface conditions at each sign location. Design footings, pedestals, drilled piers, grade beams and wings in accordance with the 6th Edition of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. In some instances, conflicts with drainage structures may dictate sign foundation types.

Design footings in accordance with Section 4.4 of the AASHTO Standard Specifications for Highway Bridges. Do not use an allowable bearing pressure of more than 3,000 lb/sf for footings.

Design drilled piers for side resistance only in accordance with Section 4.6 of the AASHTO Standard Specifications for Highway Bridges except reduce ultimate side resistance by 25% for uplift. Use the computer software LPILE version 6.0 or later manufactured by Ensoft, Inc. to analyze drilled piers. Provide drilled pier designs with a horizontal deflection of less than 1" at top of piers. For cantilever signs with single drilled pier foundations supporting metal poles, use wings to resist torsion forces. Provide drilled pier designs with a factor of safety of at least 2.0 for torsion.

For drilled pier sign foundations supporting upright trusses, use dual drilled piers connected with a grade beam having a moment of inertia approximately equal to that of either pier. The Broms' method is acceptable to analyze drilled piers with grade beams instead of LPILE. Use a safety factor of at least 3.5 for the Broms' design method in accordance with C13.6.1.1 of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

Submit boring logs, if any, working drawings and design calculations for acceptance in accordance with Article 105-2 of the 2012 Standard Specifications. Submit working drawings

TIP # R-5516 SN-3 Craven County

showing plan views, required foundation dimensions and elevations and typical sections with reinforcement, conduit and anchor rod assembly details. Include all boring logs, design calculations and LPILE output for sign foundation design submittals. Have sign foundations designed, detailed and sealed by an engineer licensed in the state of North Carolina.

Construction Methods

Construct footings, pedestals, drilled piers, grade beams and wings and install anchor rod assemblies for sign foundations in accordance with the *Foundations and Anchor Rod Assemblies* for *Metal Poles* provision.

Measurement and Payment

Overhead Footings will be measured and paid in cubic yards. Sign foundations will be measured as the cubic yards of foundation concrete for footings, pedestals, drilled piers, grade beams and wings shown on the accepted submittals. The contract unit price for Overhead Footings will be full compensation for providing labor, tools, equipment and foundation materials, stabilizing or shoring excavations and supplying concrete, reinforcing steel, conduit, anchor rod assemblies and any incidentals necessary to construct sign foundations. Subsurface investigations required by the Engineer will be paid as extra work in accordance with Article 104-7 of the 2012 Standard Specifications.

Payment will be made under:

Pay Item
Overhead Footings

Pay Unit
Cubic Yard

TIP # R-5516 SN-4 Craven County

OVERHEAD SIGN SUPPORTS

Description

Design, fabricate, furnish and erect various types of overhead sign assemblies. Fabricate supporting structures using tubular members of either aluminum or steel. The types of overhead sign assemblies included in this specification are span structures, cantilever structures and sign structures attached to bridges.

Materials

Structural Steel Section 1072
Overhead Sign Structures Section 1096
Signing Materials Section 1092
Organic Zinc Repair Paint Article 1080-9
Reinforcing Steel Section 1070
Direct Tension Indicators Sections 440 and 1072

Construction Methods

A. General

Fabricate overhead sign assemblies in accordance with the details shown in the approved working drawings and the requirements of these specifications.

No welding, cutting or drilling will be permitted in the field, unless approved by the Engineer.

Drill bolt holes and slots to finished size. Holes may also be punched to finished size provided the diameter of the punched holes is at least twice the thickness of the metal being punched. Flame cutting of bolt holes and slots is not permitted.

Erect sign panels in accordance with the requirements for Type A or B signs as indicated in the plans or Roadway Standard Drawings. Field drill two holes per connection in the Z bars for attaching signs to overhead structures. Provide two U- bolts at each U-bolt connection such as each truss chord to sign hanger and each truss chord to walkway support or light support. Provide two U-bolts at each U-bolt connection where ends of truss chords are supported. The minimum diameter of all U-bolts is ½ inch.

For all U-bolt connections of hanger beams to overhead assembly truss chords, provide all U-bolts with a flat washer and double nuts at each end of the U-bolts. All double nuts that

TIP # R-5516 SN-5 Craven County

are on any U-bolt shall be the same thickness and weight. When assembled, the double nuts shall be brought tight against each other by the use of two wrenches.

Use two coats of a zinc-rich paint to touch up minor scars on all galvanized materials. For high strength bolted connections, use direct tension indicators. Galvanize bolts, nuts and washers in accordance with the Standard Specifications.

B. Shop Drawings

Design the overhead sign supports, including foundations, prior to fabrication. Submit design calculations and working drawings of the designs to the Engineer for review and acceptance.

Have a professional engineer registered in the State of North Carolina perform the computations and render a set of sealed, signed and dated drawings detailing the construction of each structure.

Submit to the Engineer for review and acceptance complete design and fabrication details for each overhead sign assembly, including foundations and brackets for supporting the signs and maintenance walkways, if applicable, electrical control boxes, and lighting luminaires. Base design upon the revised structure line drawings, wind load area and the wind speed shown in the plans, and in accordance with the *Standard Specifications for Structural Structures for Highway Signs, Luminaires and Traffic Signals*.

Submit thirteen (13) copies of completely detailed working drawings and one copy of the design calculations including all design assumptions for each overhead sign assembly to the Engineer for approval prior to fabrication. Working drawings shall include complete design and fabrication details (including foundations); provisions for attaching signs, maintenance walkways (when applicable), lighting luminaires to supporting structures, applicable material specifications, and any other information necessary for procuring and replacing any part of the complete overhead sign assembly.

Allow 40 days for initial working drawing review after the Engineer receives them. If revisions to working drawings are required, an additional 40 days shall be required for review and approval of the final working drawings.

Approval of working drawings by the Engineer shall not relieve the Contractor of responsibility for the correctness of the drawings, or for the fit of all shop and field connections and anchors.

TIP # R-5516 SN-6 Craven County

C. Design and Fabrication

The following criteria govern the design of overhead sign assemblies:

Design shall be in accordance with the <u>Standard Specifications for Structural</u> <u>Supports for Highway Signs, Luminaires and Traffic Signals, 5th Edition, 2009</u> and the 2010 and 2011 Interim Revisions.

Within this Specification, there are several design criteria that are owner specified. They include:

- Overhead cantilever sign structures shall include galloping loads (exclude four-chord horizontal trusses).
- The natural wind gust speed in North Carolina shall be assumed to be 11.6 mph.
- The fatigue importance category used in the design, for each type of structure, shall be for:
 - Cantilever structures with span greater than 50 feet Fatigue Category I.
 - Cantilever structures with span less than or equal to 50 feet Fatigue Category II.
 - Non-cantilever structures Fatigue Category II

The following Specification interpretations or criteria shall be used in the design of overhead sign assemblies:

- For design of supporting upright posts or columns, the effective length factor for columns "K", as provided for in Appendix B, Section B.5, shall be taken as the following, unless otherwise approved by the Engineer:
 - Case 1 For a single upright post of cantilever or span type overhead sign structure, the effective column length factor, "K", shall be taken as 2.0.
 - Case 2 For twin post truss-type upright post with the post connected to one chord of a horizontal truss, the effective column length factor for that column shall be taken as 2.0.
 - Case 3 For twin post truss-type upright post with the post connected to two truss chords of a horizontal tri-chord or box truss, the effective column length factor for that column shall be taken as 1.65.
- For twin post truss-type uprights, the unbraced length of the post shall be from the chord to post connection to the top of base plate.

• For twin post truss-type uprights when the post is subject to axial compression, bending moment, shear, and torsion, the post shall satisfy <u>Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals</u> Equations 5-17, 5-18 and 5-19. To reduce the effects of secondary bending, in lieu of Equation 5-18, the following equation may be used:

$$\frac{f_a}{F_a} + \frac{f_b}{\left(1 - \frac{0.6f_a}{F_e}\right)F_b} + \left(\frac{f_v}{F_v}\right)^2 \le 1.0$$

Where fa = Computed axial compression stress at base of post

- The base plate thickness for all uprights and poles shall be a minimum of 2" but not less than that determined by the following criteria and design.
 - Case 1 Circular or rectangular solid base plates with the upright pole welded to the top surface of base plate with full penetration butt weld, and where no stiffeners are provided. A base plate with a small center hole, which is less than 1/5 of the upright diameter, and located concentrically with the upright pole, may be considered as a solid base plate.

The magnitude of bending moment in the base plate, induced by the anchoring force of each anchor bolt shall be calculated as $M = (P \times D_1) / 2$.

Case 2 Circular or rectangular base plate with the upright pole socketed into and attached to the base plate with two lines of fillet weld, and where no stiffeners are provided, or any base plate with a center hole that is larger in diameter than 1/5 of the upright diameter

The magnitude of bending moment induced by the anchoring force of each anchor bolt shall be calculated as $M = P \times D_2$.

- M bending moment at the critical section of the base plate induced by one anchor bolt
- P anchoring force of each anchor bolt
- D_1 horizontal distance between the center of the anchor bolt and the outer face of the upright, or the difference between the radius of the bolt circle and the outside radius of the upright
- D_2 horizontal distance between the face of the upright and the face of the anchor bolt nut

TIP # R-5516 SN-8 Craven County

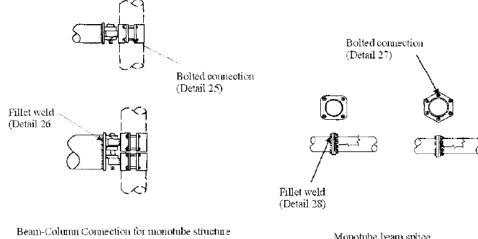
- The critical section shall be located at the face of the anchor bolt and perpendicular to the radius of the bolt circle. The overlapped part of two adjacent critical sections shall be considered ineffective.
- The thickness of Case 1 base plate shall not be less than that calculated based on formula for Case 2.
- Uprights, foundations, and trusses that support overhead signs shall be designed in accordance with the Overhead and Dynamic Message Sign Foundations Project Special Provision for the effects of torsion. Torsion shall be considered from dead load eccentricity of these attachments, as well as for attachments such as walkways, supporting brackets, lights, etc., that add to the torsion in the assembly. Truss vertical and horizontal truss diagonals in particular and any other assembly members shall be appropriately sized for these loads.
- Uprights, foundations, and trusses that support overhead mounted signs shall be
 designed for the proposed sign wind area and future wind areas. The design shall
 consider the effect of torsion induced by the eccentric force location of the center of
 wind force above (or below) the center of the supporting truss. Truss vertical and
 horizontal truss diagonals in particular and any other assembly members shall be
 appropriately sized for these loads.

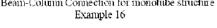
For non-cantilevered monotube sign support structures, the following table and figures are considered as a required addition to the Standard Specifications for Structural Support for Highway Signs, Luminaires and Traffic Signals, 5th Edition, 2009:

| Construction | <u>Detail</u> | Stress Category | Application | Example |
|---|--|--------------------|--|----------------|
| Mechanically Fastened Connections | 25. Bolts in Tension | D | Beam column connection for monotube structures | 16 |
| Fillet Weld Connections Mechanically | 26. Fillet welded with one side normal to applied stress | E' | Beam column connection for monotube structures Monotube or truss- | 17 |
| Fastened Connections | 27. High strength bolts in tension | D | chord splice | 17 |
| Fillet Weld Connections | 28. Fillet welded with one side normal to applied stress | E' | Monotube or truss- chord splice | 17 |
| Mechanically Fastened Connections | 29. U-bolts tied to tansverse truss column to keep chords in place | D | Horizontal truss connection with vertical truss | 18 |
| Mechanically Fastened Connections | 30. Net section of full- tightened, high tension bolts in shear | В | Truss bolted joint | 18 |

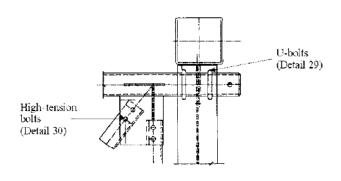
TIP # R-5516 SN-9 Craven County

Add to the Specifications, Figure 11-1:





Monotube beam splice Example 17.



Beam-Column Connection for Truss Structure Example 18

Fabricate all overhead sign assemblies, including but not limited to foundations, in accordance with the details shown on the approved shop drawings and with the requirements of these Specifications.

Fabricate the span and cantilever supporting structures using tubular members of either aluminum or steel, using only one type of material throughout the project. Sign support structures that are to be attached to bridges shall be fabricated using other structural shapes.

Horizontal components of the supporting structures for overhead signs may be of a truss design or a design using singular (monotube) horizontal members to support the sign panels.

Truss or singular member centerline must coincide with the centerline of sign design area shown on the structure line drawing.

TIP # R-5516 SN-10 Craven County

Provide permanent camber in addition to dead load camber in accordance with the *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.* Indicate on the shop drawings the amount of camber provided and the method employed in the fabrication of the support to obtain the camber.

Use cantilever sign structures that meet the following design criteria:

- a. Do not exceed an L / 150 vertical dead load deflection at the end of the arm due to distortions in the arm and vertical support, where L is the length of the arm from the center of the vertical support to the outer edge of the sign.
- b. Do not exceed an L/40 horizontal deflection at the end of the arm due to distortions in the arm and vertical support, as a result of design wind load.

Fabricate attachment assemblies for mounting signs in a manner that allows easy removal of sign panels for repair.

Compensation

The work covered by this section will be paid for at the contract lump sum for each Supports, Overhead Sign Structure @ Station 96+78 -L- and Supports, Overhead Sign Structure @ Station 21+00 -YWB01-. Such price will be full compensation for all work covered by this specification includes all design, fabrication, construction, transportation, and erection of the complete overhead sign structure, supporting structure, hardware, lighting support brackets, preparing and furnishing shop drawings, and attaching the signs to the overhead assembly.

Payment will be made under:

| Supports, Overhead Sign Structure @ | Station 96+78 –L- | Lump Sum |
|-------------------------------------|------------------------|----------|
| Supports, Overhead Sign Structure @ | Station 21+00 – YWB01- | Lump Sum |

TIP #R-5516 SN-11 Craven County

DISPOSAL OF FLASHER SYSTEM

The work covered by this special provision consists of removal and disposal of a flasher system. The system includes the sign and the sign post, utility service pole, electric meter and base, circuit breaker panel and breaker(s), control devices such as relays, wire, cable, conduit, flasher units, and all other devices and equipment in the system.

All material shall be removed and disposed according to the State and Local codes, regulations, and ordinances and shall be in accordance with the Section 907 of the NCDOT Standard Specifications for Roads and Structures.

Compensation:

Disposal of a Flasher System as described above shall be paid for at the contract lump sum price for each Flasher System.

| Payment will be made under: | |
|-----------------------------|----------|
| Disposal of Flasher System | Lump Sum |

TC-1

WBS 45492.1.1 (R-5516)

Craven County

WORK ZONE TRAFFIC CONTROL Project Special Provisions

Law Enforcement:

(05/14/2013)

Description

Furnish Law Enforcement Officers and marked Law Enforcement vehicles to direct traffic in accordance with the contract.

Construction Methods

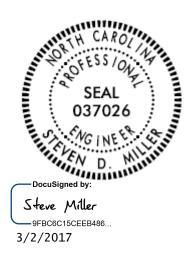
Use uniformed Law Enforcement Officers and marked Law Enforcement vehicles equipped with blue lights mounted on top of the vehicle, and Law Enforcement vehicle emblems to direct or control traffic as required by the plans or by the Engineer.

Measurement and Payment

Law Enforcement will be measured and paid for in the actual number of hours that each Law Enforcement Officer is provided during the life of the project as approved by the Engineer. There will be no direct payment for marked Law Enforcement vehicles as they are considered incidental to the pay item.

Payment will be made under:

Pay Item
Law Enforcement
Hour



Project: R-5516 UC-1 County: Craven

PROJECT SPECIAL PROVISIONS

Utility Construction



Technical Services of North Carolina, Inc. 701 Corporate Center Drive, Suite 475 Raleigh, NC 27607-5238 Project Number. 60321454 R-5516 March 9, 2017



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Revise the 2012 Standard Specifications as follows:

Page 10-58, Sub-article 1036-1 General, add the following sentence:

All materials in contact with potable water shall be in conformance with Section 1417 of the Safe Drinking Water Act.

Page 15-1, Sub-article 1500-2 Cooperation with the Utility Owner, paragraph 2: add the following sentences:

The utility owners are City of Havelock and Craven County. The contact person for the City of Havelock is Mark Sayger and he can be reached by phone at 252-444-6410. The contact person for Craven County is Rusty Hayes and he can be reached by phone at 252-636-6615.

Page 15-2, Sub-article 1500-9 Placing Pipelines into Service, add the following sentence:

Obtain approval from the NCDENR-Public Water Supply Section prior to placing a new water line into service. Use backflow prevention assemblies for temporary connections to isolate new water lines from existing water line.

Page 15-6, Sub-article 1510-3 (B), Testing and Sterilization, change the allowable leakage formula to:

$$W = LD\sqrt{P} \div 148.000$$

Page 15-6, Sub-article 1510-3 (B), Testing and Sterilization, sixth paragraph: Replace the paragraph with the following:

03/09/2017

Project: R-5516

UC-2 County: Craven

PROJECT SPECIAL PROVISIONS

Utility Construction

Sterilize water lines in accordance with Section 1003 of The Rules Governing Public Water supply and AWWA C651 Section 4.4.3, the Continuous Feed Method. Provide a chlorine solution with between 50 parts per million and 100 parts per million in the initial feed. If the chlorine level drops below 10 parts per million during a 24 hour period, then flush, refill with fresh chlorine solution, and repeat for 24 hours. Provide certified bacteriological and contaminant test results from a state-approved or state-certified laboratory. Operate all valves and controls to assure thorough sterilization.

Page 15-6, Sub-article 1510-3 (B), Testing and Sterilization, sixth paragraph: Replace the paragraph with the following:

For Cut-In Construction: Use the following procedures for disinfecting of the new installation and the existing main at the cut-in point in accordance with AWWA C651, Section 4.7:

- 1. Apply liberal quantities of hypochlorite, in the form of tablets, to the open trench.
- 2. Interior of new pipe and fittings and the ends of the existing mains shall be swabbed or sprayed with a one percent hypochlorite solution before installation.
- 3. Install a 2-inch tap downstream of the work area. Tap shall be used for blowing off the main. Or use the next fire hydrant downstream of the work area for blowing off the main.
- 4. Install a 2-inch tap just upstream of the new installation. Control Water from the existing system so as to flow slowly into the work area during the application of chlorine. After the line is thoroughly flushed, add chlorine solution at a concentration of 100 ppm by the continuous feed method and hold in the main for one (1) hour.
- 5. After one hour proceed with flushing until the lines contain the normal chlorine residual of the system.

Page 15-6, Sub-article 1510-3 (B), Testing and Sterilization, seventh paragraph: delete the words "may be performed concurrently or consecutively." and replace with "shall be performed consecutively."

Page 15-7, sub-article 1515-2 Materials,

replace paragraph beginning "Double check valves..." with the following:

Double Check valves (DCV) and Reduced Pressure Zone principal (RPZ) backflow prevention assemblies shall be listed on the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research list of approved backflow devices.

03/09/2017 2/3

Project: R-5516

UC-3 County: Craven

PROJECT SPECIAL PROVISIONS

Utility Construction

Page 15-11, Sub-article 1520-3(A)(2) Testing, line 5,

replace the second paragraph with the following:

Test all 24" and smaller gravity sewer lines for leakage using infiltration, exfiltration, or air test. Perform visual inspection on gravity sewer lines larger than 24". Perform line and grade testing and deflection testing on all gravity sewer lines.

I. MEASUREMENT AND PAYMENT:

Ductile Iron Water Pipe Fittings:

The quantity of Ductile Iron Water Pipe Fittings will be measured and paid for per pound based on the published weights for ductile iron fittings, exclusive of the weights of any accessories, as listed in the "DI Fittings Weight Chart" located at the NCDOT Utilities Material Estimates web site. If the Contractor elects to use compact ductile iron pipe fittings, measurement will be based on the weight of standard size ductile iron water pipe fittings. Any fitting not listed will be measured based on the published weights for ductile iron fittings listed in ANSI/AWWA C-110/A21.10. This is limited to pressure pipe 4 inches or larger.

Payment will be made under:

Pay ItemPay UnitDuctile Iron Water Pipe FittingsLB

Ductile Iron Sewer Pipe Fittings:

The quantity of Ductile Iron Sewer Pipe Fittings will be measured and paid for per pound based on the published weights for ductile iron fittings, exclusive of the weights of any accessories, as listed in the "DI Fittings Weight Chart" located at the NCDOT Utilities Material Estimates web site. If the Contractor elects to use compact ductile iron pipe fittings, measurement will be based on the weight of standard size ductile iron sewer pipe fittings. Any fitting not listed will be measured based on the published weights for ductile iron fittings listed in ANSI/AWWA C-110/A21.10. This is limited to pressure pipe 4 inches or larger.

Payment will be made under:

Pay ItemPay UnitDuctile Iron Sewer Pipe FittingsLB

03/09/2017 3/3



General:

The following utility companies have facilities that will be in conflict with the construction of this project:

- A. Duke Energy Power (Distribution)
- B. Duke Energy Power (Transmission)
- C. City of Newbern Electric Power (Distribution)
- D. Century Link Communication
- E. City of Havelock Sewer
- F. Cherry Point Military Base Lighting
- G. Time Warner Communications
- H. Craven County School Fiber

The conflicting facilities of these concerns will be adjusted prior to the date of availability, unless otherwise noted and are therefore listed in these special provisions for the benefit of the Contractor. All utility work listed herein will be done by the utility owners. All utilities are shown on the plans from the best available information.

The Contractor's attention is directed to Article 105.8 of the Standard Specifications.

Utilities Requiring Adjustment:

Utility relocations are shown on the Utility by Others Plans.

A) Duke Energy – Power (Distribution)

Contact Information: Eddie Watkins

919-882-5051

Eddie.watkins@duke-energy.com

- 1. See Utilities by Others Plans.
- 2. Duke Distribution will be completed prior to let.
- B) Duke Energy Power (Transmission)

Contact Information: Jamie Loy

919-546-6034

Jamie.loy@pgnmail.com

1. See Utilities by Others Plans.

Project: R-5516 **County: Craven**

2. Duke Transmission is scheduled to be completed by October 27, 2017.

C) City of Newbern Electric

Contact Information: Carl Toler

210 Kale Road

New Bern, NC 28562

252-639-2823

tolerc@newbern-nc.org

1. See Utilities by Others Plans.

2. City of Newbern Electric will be completed prior to let.

D) Century Link

Contact Information: Mitch Averitte

1875 North 20th St.

Morehead City, NC 28577

252-247-4493

Mitchell.averitte@centurylink.com

1. See Utilities by Others Plans.

2. Century Link will be completed prior to let.

E) City of Havelock - Sewer

Contact Information: Chad Ives, GISP

> 199 Cunningham Blvd. Havelock, NC 28532

252-444-6432

cives@havelocknc.us

- 1. See Utilities by Others Plans.
- 2. All relocation efforts of Pump Station will be completed prior to May 1, 2018.
- F) Cherry Point Military Base Lighting

Contact Information: David Miller

252-466-4716

winston.miller@usmc.mil

- 1. Cherry Point will remove all impacted utilities outside of base limits. This will include existing Electric Transformer and existing lighting.
- 2. Lighting must be maintained as long as possible at the base guard station.
- 3. Cherry Point will need to be communicated with prior to construction for the removal of Transformer at station –YEB01- 59+00 and 3 existing roadway lighting poles. Cherry Point will need 2 weeks advance notice for removal of these facilities.

4. Contractor shall coordinate with the base in regards to all relocations.

G) Time Warner - Communications

Contact Information: Vincent Brayboy

500 Time Warner Drive Newport, NC 28570

910-219-6615

Vincent.brayboy@twcable.com

1. See Utilities by Others Plans.

2. Time Warner will be completed prior to let.

H) Craven County Schools – Fiber

Contact Information: Francis M. Altman

Craven County Schools

(252) 514-6393

Francis.altman@cravenk12.org

- 1. See Utilities by Others Plans.
- 2. All relocations are complete.

Project Special Provisions Erosion Control

STABILIZATION REQUIREMENTS:

(3-11-2016)

Stabilization for this project shall comply with the time frame guidelines as specified by the NCG-010000 general construction permit effective August 3, 2011 issued by the North Carolina Department of Environment and Natural Resources Division of Water Quality. Temporary or permanent ground cover stabilization shall occur within 7 calendar days from the last land-disturbing activity, with the following exceptions in which temporary or permanent ground cover shall be provided in 14 calendar days from the last land-disturbing activity:

- Slopes between 2:1 and 3:1, with a slope length of 10 ft. or less
- Slopes 3:1 or flatter, with a slope of length of 50 ft. or less
- Slopes 4:1 or flatter

The stabilization timeframe for High Quality Water (HQW) Zones shall be 7 calendar days with no exceptions for slope grades or lengths. High Quality Water Zones (HQW) Zones are defined by North Carolina Administrative Code 15A NCAC 04A.0105 (25). Temporary and permanent ground cover stabilization shall be achieved in accordance with the provisions in this contract and as directed.

SEEDING AND MULCHING:

(East)

The kinds of seed and fertilizer, and the rates of application of seed, fertilizer, and limestone, shall be as stated below. During periods of overlapping dates, the kind of seed to be used shall be determined. All rates are in pounds per acre.

All Roadway Areas

| March 1 - August 31 September 1 - February 28 | | | 1 - February 28 |
|---|-----------------------|-------|-------------------------|
| 50# | Tall Fescue | 50# | Tall Fescue |
| 10# | Centipede | 10# | Centipede |
| 25# | Bermudagrass (hulled) | 35# | Bermudagrass (unhulled) |
| 500# | Fertilizer | 500# | Fertilizer |
| 4000# | Limestone | 4000# | Limestone |

Waste and Borrow Locations

| March 1 – August 31 September 1 - February 28 | | 1 - February 28 | |
|---|-----------------------|-----------------|-------------------------|
| 75# | Tall Fescue | 75# | Tall Fescue |
| 25# | Bermudagrass (hulled) | 35# | Bermudagrass (unhulled) |
| 500# | Fertilizer | 500# | Fertilizer |
| 4000# | Limestone | 4000# | Limestone |

Note: 50# of Bahiagrass may be substituted for either Centipede or Bermudagrass only upon Engineer's request.

Approved Tall Fescue Cultivars

| 06 Dust 2nd Millennium 3rd Millennium Apache III Avenger Barlexas Barlexas II Bar Fa Barrera Barrington Barrobusto Barvado Biltmore Bingo Bizem Blackwatch Blade Runner II Bonsai Braveheart Bravo Bullseye | Escalade Essential Evergreen 2 Falcon IV Falcon NG Falcon V Faith Fat Cat Festnova Fidelity Finelawn Elite Finelawn Xpress Finesse II Firebird Firecracker LS Firenza Five Point Focus Forte Garrison Gazelle II | Justice Kalahari Kitty Hawk 2000 Legitimate Lexington LSD Magellan Matador Millennium SRP Monet Mustang 4 Ninja 2 Ol' Glory Olympic Gold Padre Patagonia Pedigree Picasso Piedmont Plantation Proseeds 5301 | Serengeti Shelby Sheridan Signia Silver Hawk Sliverstar Shenandoah Elite Sidewinder Skyline Solara Southern Choice II Speedway Spyder LS Sunset Gold Taccoa Tanzania Trio Tahoe II Talladega Tarheel Terrano |
|---|--|---|--|
| | | | |
| | | | 0 |
| | | | |
| Cannavaro | Gold Medallion | Prospect | Titan ltd |
| Catalyst | Grande 3 | Pure Gold | Titanium LS |
| Cayenne | Greenbrooks | Quest | Tracer |
| Cessane Rz | Greenkeeper | Raptor II | Traverse SRP |
| Chipper | Gremlin | Rebel Exeda | Tulsa Time |
| Cochise IV | Greystone | Rebel Sentry | Turbo |
| Constitution | Guardian 21 | Rebel IV | Turbo RZ |
| Corgi | Guardian 41 | Regiment II | Tuxedo RZ |
| Corona | Hemi | Regenerate | Ultimate |
| Coyote | Honky Tonk | Rendition | Venture |
| Darlington | Hot Rod | Rhambler 2 SRP | Umbrella |
| Davinci | Hunter | Rembrandt | Van Gogh |
| Desire | Inferno | Reunion | Watchdog |
| Dominion | Innovator | Riverside | Wolfpack II |
| Dynamic | Integrity | RNP | Xtremegreen |
| Dynasty | Jaguar 3 | Rocket | |
| Endeavor | Jamboree | Scorpion | |

On cut and fill slopes 2:1 or steeper Centipede shall be applied at the rate of 5 pounds per acre and add 20# of Sericea Lespedeza from January 1 - December 31.

Fertilizer shall be 10-20-20 analysis. A different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as a 10-20-20 analysis and as directed.

Native Grass Seeding and Mulching

(East)

Native Grass Seeding and Mulching shall be performed on the disturbed areas of wetlands and riparian areas, and adjacent to Stream Relocation construction within a 50 foot zone on both sides of the stream or depression, measured from top of stream bank or center of depression. The stream bank of the stream relocation shall be seeded by a method that does not alter the typical cross section of the stream bank. Native Grass Seeding and Mulching shall also be performed in the permanent soil reinforcement mat section of preformed scour holes, and in other areas as directed.

The kinds of seed and fertilizer, and the rates of application of seed, fertilizer, and limestone, shall be as stated below. During periods of overlapping dates, the kind of seed to be used shall be determined. All rates are in pounds per acre.

| March 1 | - August 31 | Septemb | er 1 - February 28 |
|---------|---------------------|---------|---------------------|
| 18# | Creeping Red Fescue | 18# | Creeping Red Fescue |
| 6# | Indiangrass | 6# | Indiangrass |
| 8# | Little Bluestem | 8# | Little Bluestem |
| 4# | Switchgrass | 4# | Switchgrass |
| 25# | Browntop Millet | 35# | Rye Grain |
| 500# | Fertilizer | 500# | Fertilizer |
| 4000# | Limestone | 4000# | Limestone |

Approved Creeping Red Fescue Cultivars:

| Aberdeen | Boreal | Epic | Cindy Lou |
|----------|--------|------|-----------|
| ADCIUCUI | DOICAL | EDIC | CHIUV LOU |

Fertilizer shall be 10-20-20 analysis. A different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as a 10-20-20 analysis and as directed.

Native Grass Seeding and Mulching shall be performed in accordance with Section 1660 of the *Standard Specifications* and vegetative cover sufficient to restrain erosion shall be installed immediately following grade establishment.

Measurement and Payment

Native Grass *Seeding and Mulching* will be measured and paid for in accordance with Article 1660-8 of the *Standard Specifications*.

All areas seeded and mulched shall be tacked with asphalt. Crimping of straw in lieu of asphalt tack shall not be allowed on this project.

CRIMPING STRAW MULCH:

Crimping shall be required on this project adjacent to any section of roadway where traffic is to be maintained or allowed during construction. In areas within six feet of the edge of pavement, straw is to be applied and then crimped. After the crimping operation is complete, an additional application of straw shall be applied and immediately tacked with a sufficient amount of undiluted emulsified asphalt.

Straw mulch shall be of sufficient length and quality to withstand the crimping operation.

Crimping equipment including power source shall be subject to the approval of the Engineer providing that maximum spacing of crimper blades shall not exceed 8".

TEMPORARY SEEDING:

Fertilizer shall be the same analysis as specified for *Seeding and Mulching* and applied at the rate of 400 pounds and seeded at the rate of 50 pounds per acre. Sweet Sudan Grass, German Millet or Browntop Millet shall be used in summer months and Rye Grain during the remainder of the year. The Engineer will determine the exact dates for using each kind of seed.

FERTILIZER TOPDRESSING:

Fertilizer used for topdressing on all roadway areas except slopes 2:1 and steeper shall be 10-20-20 grade and shall be applied at the rate of 500 pounds per acre. A different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as 10-20-20 analysis and as directed.

Fertilizer used for topdressing on slopes 2:1 and steeper and waste and borrow areas shall be 16-8-8 grade and shall be applied at the rate of 500 pounds per acre. A different analysis of fertilizer may be used provided the 2-1-1 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as 16-8-8 analysis and as directed.

SUPPLEMENTAL SEEDING:

The kinds of seed and proportions shall be the same as specified for *Seeding and Mulching*, with the exception that no centipede seed will be used in the seed mix for supplemental seeding. The rate of application for supplemental seeding may vary from 25# to 75# per acre. The actual rate per acre will be determined prior to the time of topdressing and the Contractor will be notified in writing of the rate per acre, total quantity needed, and areas on which to apply the supplemental seed. Minimum tillage equipment, consisting of a sod seeder shall be used for incorporating seed into the soil as to prevent disturbance of existing vegetation. A clodbuster (ball and chain) may be used where degree of slope prevents the use of a sod seeder.

MOWING:

The minimum mowing height on this project shall be 4 inches.

REFORESTATION:

Description

Reforestation will be planted within interchanges and along the outside borders of the road, and in other areas as directed. *Reforestation* is not shown on the plan sheets. See the Reforestation Detail Sheet.

All non-maintained riparian buffers impacted by the placement of temporary fill or clearing activities shall be restored to the preconstruction contours and revegetated with native woody species.

The entire *Reforestation* operation shall comply with the requirements of Section 1670 of the *Standard Specifications*.

Materials

Reforestation shall be bare root seedlings 12"-18" tall.

Construction Methods

Reforestation shall be shall be planted as soon as practical following permanent Seeding and Mulching. The seedlings shall be planted in a 16-foot wide swath adjacent to mowing pattern line, or as directed.

Root dip: The roots of reforestation seedlings shall be coated with a slurry of water, and either a fine clay (kaolin) or a superabsorbent that is designated as a bare root dip. The type, mixture ratio, method of application, and the time of application shall be submitted to the Engineer for approval.

With the approval of the Engineer, seedlings may be coated before delivery to the job or at the time of planting, but at no time shall the roots of the seedlings be allowed to dry out. The roots shall be moistened immediately prior to planting.

Seasonal Limitations: *Reforestation* shall be planted from November 15 through March 15.

Measurement and Payment

Reforestation will be measured and paid for in accordance with Article 1670-17 of the Standard Specifications.

RESPONSE FOR EROSION CONTROL:

Description

Furnish the labor, materials, tools and equipment necessary to move personnel, equipment, and supplies to the project necessary for the pursuit of any or all of the following work as shown herein, by an approved subcontractor.

| Section | Erosion Control Item | Unit |
|---------|----------------------------------|--------|
| 1605 | Temporary Silt Fence | LF |
| 1606 | Special Sediment Control Fence | LF/TON |
| 1615 | Temporary Mulching | ACR |
| 1620 | Seed - Temporary Seeding | LB |
| 1620 | Fertilizer - Temporary Seeding | TN |
| 1631 | Matting for Erosion Control | SY |
| SP | Coir Fiber Mat | SY |
| 1640 | Coir Fiber Baffles | LF |
| SP | Permanent Soil Reinforcement Mat | SY |
| 1660 | Seeding and Mulching | ACR |
| 1661 | Seed - Repair Seeding | LB |
| 1661 | Fertilizer - Repair Seeding | TON |
| 1662 | Seed - Supplemental Seeding | LB |
| 1665 | Fertilizer Topdressing | TON |
| SP | Safety/Highly Visible Fencing | LF |
| SP | Response for Erosion Control | EA |

Construction Methods

Provide an approved subcontractor who performs an erosion control action as described in the NPDES Inspection Form SPPP30. Each erosion control action may include one or more of the above work items.

Measurement and Payment

Response for Erosion Control will be measured and paid for by counting the actual number of times the subcontractor moves onto the project, including borrow and waste sites, and satisfactorily completes an erosion control action described in Form 1675. The provisions of Article 104-5 of the Standard Specifications will not apply to this item of work.

Payment will be made under:

Pay Item Pay Unit

Response for Erosion Control Each

ENVIRONMENTALLY SENSITIVE AREAS:

Description

This project is located in an *Environmentally Sensitive Area*. This designation requires special procedures to be used for clearing and grubbing, temporary stream crossings, and grading operations within the Environmentally Sensitive Areas identified on the plans and as designated by the Engineer. This also requires special procedures to be used for seeding and mulching and staged seeding within the project.

The Environmentally Sensitive Area shall be defined as a 50-foot buffer zone on both sides of the stream or depression measured from top of streambank or center of depression.

Construction Methods

(A) Clearing and Grubbing

In areas identified as Environmentally Sensitive Areas, the Contractor may perform clearing operations, but not grubbing operations until immediately prior to beginning grading operations as described in Article 200-1 of the *Standard Specifications*. Only clearing operations (not grubbing) shall be allowed in this buffer zone until immediately prior to beginning grading operations. Erosion control devices shall be installed immediately following the clearing operation.

(B) Grading

Once grading operations begin in identified Environmentally Sensitive Areas, work shall progress in a continuous manner until complete. All construction within these areas shall progress in a continuous manner such that each phase is complete and areas are permanently stabilized prior to beginning of next phase. Failure on the part of the Contractor to complete any phase of construction in a continuous manner in Environmentally Sensitive Areas will be just cause for the Engineer to direct the suspension of work in accordance with Article 108-7 of the *Standard Specifications*.

(C) Temporary Stream Crossings

Any crossing of streams within the limits of this project shall be accomplished in accordance with the requirements of Subarticle 107-12 of the *Standard Specifications*.

(D) Seeding and Mulching

Seeding and mulching shall be performed in accordance with Section 1660 of the *Standard Specifications* and vegetative cover sufficient to restrain erosion shall be installed immediately following grade establishment.

Seeding and mulching shall be performed on the areas disturbed by construction immediately following final grade establishment. No appreciable time shall lapse into the contract time without stabilization of slopes, ditches and other areas within the Environmentally Sensitive Areas.

(E) Stage Seeding

The work covered by this section shall consist of the establishment of a vegetative cover on cut and fill slopes as grading progresses. Seeding and mulching shall be done in stages on cut and fill slopes that are greater than 20 feet in height measured along the slope, or greater than 2 acres in area. Each stage shall not exceed the limits stated above.

Additional payments will not be made for the requirements of this section, as the cost for this work shall be included in the contract unit prices for the work involved.

MINIMIZE REMOVAL OF VEGETATION:

The Contractor shall minimize removal of vegetation within project limits to the maximum extent practicable. Vegetation along stream banks and adjacent to other jurisdictional resources outside the construction limits shall only be removed upon approval of Engineer. No additional payment will be made for this minimization work.

STOCKPILE AREAS:

The Contractor shall install and maintain erosion control devices sufficient to contain sediment around any erodible material stockpile areas as directed.

ACCESS AND HAUL ROADS:

At the end of each working day, the Contractor shall install or re-establish temporary diversions or earth berms across access/haul roads to direct runoff into sediment devices. Silt fence sections that are temporarily removed shall be reinstalled across access/haul roads at the end of each working day.

WASTE AND BORROW SOURCES:

Payment for temporary erosion control measures, except those made necessary by the Contractor's own negligence or for his own convenience, will be paid for at the appropriate contract unit price for the devices or measures utilized in borrow sources and waste areas.

No additional payment will be made for erosion control devices or permanent seeding and mulching in any commercial borrow or waste pit. All erosion and sediment control practices that may be required on a commercial borrow or waste site will be done at the Contractor's expense.

All offsite Staging Areas, Borrow and Waste sites shall be in accordance with "Borrow and Waste Site Reclamation Procedures for Contracted Projects" located at:

 $\underline{\text{http://www.ncdot.gov/doh/operations/dp_chief_eng/roadside/fieldops/downloads/Files/Contracted} \\ dReclamationProcedures.pdf$

All forms and documents referenced in the "Borrow and Waste Site Reclamation Procedures for Contracted Projects" shall be included with the reclamation plans for offsite staging areas, and borrow and waste sites.

TEMPORARY DIVERSION:

This work consists of installation, maintenance, and cleanout of *Temporary Diversions* in accordance with Section 1630 of the *Standard Specifications*. The quantity of excavation for installation and cleanout will be measured and paid for as *Silt Excavation* in accordance with Article 1630-3 of the *Standard Specifications*.

CLEAN WATER DIVERSION:

Description

This work consists of installing, maintaining, and removing any and all material required for the construction of clean water diversions. The clean water diversions shall be used to direct water flowing from offsite around/away from specific area(s) of construction.

Materials

Refer to Division 10

ItemSectionGeotextile for Soil Stabilization, Type 41056

Construction Methods

The Contractor shall install the clean water diversions in accordance with the details in the plans and at locations indicated in the plans, and as directed. Upon installation, the excavated material shall be immediately stabilized as provided in Section 1620 of the *Standard Specifications*. Other stabilization methods may be utilized with prior approval from the Engineer.

Line clean water diversion with geotextile unrolled in the direction of flow and lay smoothly but loosely on soil surface without creases. Bury top of slope geotextile edge in a trench at least 5"

deep and tamp securely. Make vertical overlaps a minimum of 18" with upstream geotextile overlapping the downstream geotextile.

Secure geotextile with eleven gauge wire staples shaped into a *u* shape with a length of not less than 6" and a throat not less than 1" in width. Place staples along outer edges and throughout the geotextile a maximum of 3 ft. horizontally and vertically.

Measurement and Payment

Silt Excavation will be measured and paid for in accordance with Article 1630-4 of the *Standard Specifications*.

Geotextile for Soil Stabilization will be measured and paid for in accordance with Article 270-4 of the *Standard Specifications*.

Stabilization of the excavated material will be paid for as *Temporary Seeding* as provided in Section 1620 of the *Standard Specifications*.

Such price and payment shall be considered full compensation for all work covered by this section including all materials, construction, maintenance, and removal of the clean water diversions.

SAFETY FENCE AND JURISDICTIONAL FLAGGING:

Description

Safety Fence shall consist of furnishing materials, installing and maintaining polyethylene or polypropylene fence along the outside riparian buffer, wetland, or water boundary, or other boundaries located within the construction corridor to mark the areas that have been approved to infringe within the buffer, wetland, endangered vegetation, culturally sensitive areas or water. The fence shall be installed prior to any land disturbing activities.

Interior boundaries for jurisdictional areas noted above shall be delineated by stakes and highly visible flagging.

Jurisdictional boundaries at staging areas, waste sites, or borrow pits, whether considered outside or interior boundaries shall be delineated by stakes and highly visible flagging.

Materials

(A) Safety Fencing

Polyethylene or polypropylene fence shall be a highly visible preconstructed safety fence approved by the Engineer. The fence material shall have an ultraviolet coating.

Either wood posts or steel posts may be used. Wood posts shall be hardwood with a wedge or pencil tip at one end, and shall be at least 5 ft. in length with a minimum nominal 2" x 2" cross section. Steel posts shall be at least 5 ft. in length, and have a minimum weight of 0.85 lb/ft of length.

(B) Boundary Flagging

Wooden stakes shall be 4 feet in length with a minimum nominal 3/4" x 1-3/4" cross section. The flagging shall be at least 1" in width. The flagging material shall be vinyl and shall be orange in color and highly visible.

Construction Methods

No additional clearing and grubbing is anticipated for the installation of this fence. The fence shall be erected to conform to the general contour of the ground.

(A) Safety Fencing

Posts shall be set at a maximum spacing of 10 ft., maintained in a vertical position and hand set or set with a post driver. Posts shall be installed a minimum of 2 ft. into the ground. If hand set, all backfill material shall be thoroughly tamped. Wood posts may be sharpened to a dull point if power driven. Posts damaged by power driving shall be removed and replaced prior to final acceptance. The tops of all wood posts shall be cut at a 30-degree angle. The wood posts may, at the option of the Contractor, be cut at this angle either before or after the posts are erected.

The fence geotextile shall be attached to the wood posts with one 2" galvanized wire staple across each cable or to the steel posts with wire or other acceptable means.

Place construction stakes to establish the location of the safety fence in accordance with Article 105-9 or Article 801-1 of the *Standard Specifications*. No direct pay will be made for the staking of the safety fence. All stakeouts for safety fence shall be considered incidental to the work being paid for as "Construction Surveying", except that where there is no pay item for construction surveying, all safety fence stakeout will be performed by state forces.

The Contractor shall be required to maintain the safety fence in a satisfactory condition for the duration of the project as determined by the Engineer.

(B) Boundary Flagging

Boundary flagging delineation of interior boundaries shall consist of wooden stakes on 25 feet maximum intervals with highly visible orange flagging attached. Stakes shall be installed a minimum of 6" into the ground. Interior boundaries may be staked on a tangent that runs parallel to buffer but must not encroach on the buffer at any location. Interior boundaries of hand clearing shall be identified with a different colored flagging to distinguish it from mechanized clearing.

Boundary flagging delineation of interior boundaries will be placed in accordance with Article 105-9 or Article 801-1 of the *Standard Specifications*. No direct pay will be made for delineation of the interior boundaries. This delineation will be considered incidental to the work being paid for as *Construction Surveying*, except that where there is no pay item or construction surveying the cost of boundary flagging delineation shall be included in the unit prices bid for the various items in the contract. Installation for delineation of all jurisdictional boundaries at staging areas, waste sites, or borrow pits shall consist of wooden stakes on 25 feet maximum intervals with highly visible orange flagging attached. Stakes shall be installed a minimum of 6" into the ground. Additional flagging may be placed on overhanging vegetation to enhance visibility but does not substitute for installation of stakes.

Installation of boundary flagging for delineation of all jurisdictional boundaries at staging areas, waste sites, or borrow pits shall be performed in accordance with Subarticle 230-4(B)(5) or Subarticle 802-2(F) of the *Standard Specifications*. No direct pay will be made for this delineation, as the cost of same shall be included in the unit prices bid for the various items in the contract.

The Contractor shall be required to maintain alternative stakes and highly visible flagging in a satisfactory condition for the duration of the project as determined by the Engineer.

Measurement and Payment

Safety Fence will be measured and paid as the actual number of linear feet of polyethylene or polypropylene fence installed in place and accepted. Such payment will be full compensation including but not limited to furnishing and installing fence geotextile with necessary posts and post bracing, staples, tie wires, tools, equipment and incidentals necessary to complete this work.

Payment will be made under:

Pay ItemPay UnitSafety FenceLinear Foot

SKIMMER BASIN WITH BAFFLES:

(East)

Description

Provide a skimmer basin to remove sediment from construction site runoff at locations shown in the erosion control plans. See the Skimmer Basin with Baffles Detail sheet provided in the erosion control plans. Work includes constructing sediment basin, installation of temporary slope drain pipe and coir fiber baffles, furnishing, installation and cleanout of skimmer, providing and placing stone pad on bottom of basin underneath skimmer device, providing and placing a geotextile spillway liner, providing coir fiber mat stabilization for the skimmer outlet, disposing of excess materials, removing temporary slope drain, coir fiber baffles, geotextile liner and skimmer device, backfilling basin area with suitable material and providing proper drainage when basin area is abandoned.

Materials

| Item | Section |
|---|---------|
| Stone for Erosion Control, Class B | 1042 |
| Geotextile for Soil Stabilization, Type 4 | 1056 |
| Fertilizer for Temporary Seeding | 1060-2 |
| Seed for Temporary Seeding | 1060-4 |
| Seeding and Mulching | 1060-4 |
| Matting for Erosion Control | 1060-8 |
| Staples | 1060-8 |
| Coir Fiber Mat | 1060-14 |
| Temporary Slope Drain | 1622-2 |
| Coir Fiber Baffle | 1640 |

Provide appropriately sized and approved skimmer device.

Provide Schedule 40 PVC pipe with a length of 6 ft. to attach to the skimmer and the coupling connection to serve as the arm pipe. For skimmer sizes of 2.5 in. and smaller, the arm pipe diameter shall be 1.5 inches. For skimmer sizes of 3 in. and larger, refer to manufacturer recommendation.

Provide 4" diameter Schedule 40 PVC pipe to attach to coupling connection of skimmer to serve as the barrel pipe through the earthen dam.

The geotextile for the spillway liner shall meet the following minimum physical properties for low permeability, woven polypropylene geotextiles:

| Property | Test Method | Value | Unit |
|------------------------------|--------------------|-------|-------------------------|
| Tensile Strength | ASTM D-4632 | 315 | lb. |
| Tensile Elongation (Maximum) | ASTM D-4632 | 15 | % |
| Trapezoidal Tear | ASTM D-4533 | 120 | lbs. |
| CBR Puncture | ASTM D-6241 | 900 | lbs. |
| UV Resistance | ASTM D-4355 | 70 | % |
| (% retained at 500 hrs.) | | | |
| Apparent Opening Size (AOS) | ASTM D-4751 | 40 | US Std. Sieve |
| Permittivity | ASTM D-4491 | 0.05 | sec ⁻¹ |
| Water Flow Rate | ASTM D-4491 | 4 | gal/min/ft ² |

Anchors: Staples, stakes, or reinforcement bars shall be used as anchors.

Wooden Stakes:

Provide hardwood stakes 12"- 24" long with a 2" x 2" nominal square cross section. One end of the stake must be sharpened or beveled to facilitate driving through the coir fiber mat and down into the underlying soil. The other end of the stake needs to have a 1"- 2" long head at the top with a 1"- 2" notch following to catch and secure the coir fiber mat.

Steel Reinforcement Bars:

Provide uncoated #10 steel reinforcement bars 24" nominal length. The bars shall have a 4" diameter bend at one end with a 4" straight section at the tip to catch and secure the coir fiber mat.

Staples:

Provide staples made of 0.125" diameter new steel wire formed into a u shape not less than 12" in length with a throat of 1" in width.

Construction Methods

Excavate basin according to the erosion control plans with basin surface free of obstructions, debris, and pockets of low-density material. Install temporary slope drain pipe and construct the primary spillway according to the Skimmer Basin with Baffles Detail sheet in the erosion control plans. Temporary slope drain pipe at inlet of basin may be replaced by Type 4 geotextile as directed. Construct the coir fiber baffles according to *Roadway Standard Drawings* No. 1640.01 and Section 1640 of the *Standard Specifications*.

Install skimmer device according to manufacturer recommendations. Install 4" Schedule 40 PVC pipe into dam on the lower side of basin 1 ft. from the bottom of the basin and according to the detail, and extend the pipe so the basin will drain. Attach a 6 ft. arm pipe to the coupling connection and skimmer according to manufacturer recommendations. The coupling shall be rigid and non-buoyant and not exceed a diameter of 4" and 12" in length. Attach the rope included with the skimmer to the tee between the vent socket and the tube inlet, and the other end to a wooden stake or metal post. Clean out skimmer device when it becomes clogged with sediment and/or debris and is unable to float at the top of water in skimmer basin. Take appropriate measures to avoid ice accumulation in the skimmer device. Construct a stone pad of Class B stone directly underneath the skimmer device at bottom of basin. The pad shall be a minimum of 12" in height, and shall have a minimum cross sectional area of 4 ft. by 4 ft.

Line primary spillway with low permeability polypropylene geotextile unrolled in the direction of flow and lay smoothly but loosely on soil surface without creases. Bury edges of geotextile in a trench at least 5" deep and tamp firmly. If geotextile for the primary spillway is not one continuous piece of material, make horizontal overlaps a minimum of 18" with upstream geotextile overlapping the downstream geotextile. Secure geotextile with eleven gauge wire staples shaped into a *u* shape with a length of not less than 12" and a throat not less than 1" in width. Place staples along outer edges and throughout the geotextile a maximum of 3 ft. horizontally and vertically. Geotextile shall be placed to the bottom and across the entire width of the basin according to the Skimmer Basin with Baffles detail. Place sealant inside basin around barrel pipe on top of geotextile with a minimum width of 6 in.

At the skimmer outlet, provide a smooth soil surface free from stones, clods, or debris that will prevent contact of the coir fiber matting with the soil. Unroll the matting and apply without stretching such that it will lie smoothly but loosely on the soil surface. Wooden stakes,

reinforcement bars, or staples may be used as anchors in accordance with the details in the plans and as directed. Place anchors across the matting at the ends approximately 1 ft. apart. Place anchors along the outer edges and down the center of the matting 3 ft. apart.

All bare side slope sections of the skimmer basin shall be seeded with a temporary or permanent seed mix as directed and in accordance with Articles 1620-3, 1620-4, 1620-5, 1660-4, 1660-5 and 1660-7 of the *Standard Specifications*. Straw or excelsior matting shall be installed on all bare side slope sections immediately upon the completion of seeding and in accordance with Article 1631-3 of the *Standard Specifications*.

Measurement and Payment

Silt Excavation will be measured and paid for in accordance with Article 1630-4 of the *Standard Specifications*, as calculated from the typical section throughout the length of the basin as shown on the final approved plans.

Geotextile for Soil Stabilization will be measured and paid for in accordance with Article 270-4 of the Standard Specifications.

Low Permeability Geotextile will be measured and paid for as the actual number of square yards measured along the surface of the spillway over which the geotextile is installed and accepted.

Coir Fiber Baffles will be measured and paid for in accordance with Article 1640-4 of the Standard Specifications.

__" Skimmer will be measured in units of each. __" Skimmer will be measured and paid for as the maximum number of each size skimmer acceptably installed and in use at any one time during the life of the project. Barrel and arm pipe, cleanout, relocation and reinstallation of __" Skimmer is considered incidental to the measurement of the quantity of __" Skimmer and no separate payment will be made. No separate payment shall be made if __" Skimmer, barrel and/or arm pipe(s) are damaged by ice accumulation.

Coir Fiber Mat will be measured and paid for as the actual number of square yards measured along the surface of the ground over which coir fiber mat is installed and accepted.

Temporary Slope Drain will be measured and paid for in accordance with Article 1622-4 of the *Standard Specifications*.

Stone for Erosion Control, Class __ will be measured and paid for in accordance with Article 1610-4 of the Standard Specifications.

Seeding and Mulching will be measured and paid for in accordance with Article 1660-8 of the *Standard Specifications*.

Seed for Temporary Seeding will be measured and paid for in accordance with Article 1620-6 of the *Standard Specifications*.

Fertilizer for Temporary Seeding will be measured and paid for in accordance with Article 1620-6 of the Standard Specifications.

Matting for Erosion Control will be measured and paid for in accordance with Article 1631-4 of the *Standard Specifications*.

No measurement will be made for other items or for over excavation or stockpiling.

Payment will be made under:

Pay ItemPay Unit_" SkimmerEachCoir Fiber MatSquare YardLow Permeability GeotextileSquare Yard

WATTLES WITH POLYACRYLAMIDE (PAM):

Description

Wattles are tubular products consisting of excelsior fibers encased in synthetic netting. Wattles are used on slopes or channels to intercept runoff and act as a velocity break. Wattles are to be placed at locations shown on the plans or as directed. Installation shall follow the detail provided in the plans and as directed. Work includes furnishing materials, installation of wattles, matting installation, PAM application, and removing wattles.

Materials

Wattle shall meet the following specifications:

100% Curled Wood (Excelsior) Fibers

Minimum Diameter 12 in.

Minimum Density $2.5 \text{ lb/ft}^3 +/- 10\%$

Net Material Synthetic
Net Openings 1 in. x 1 in.
Net Configuration Totally Encased

Minimum Weight 20 lb. +/- 10% per 10 ft. length

Anchors: Stakes shall be used as anchors.

Wooden Stakes:

Provide hardwood stakes a minimum of 2-ft. long with a 2 in. x 2 in. nominal square cross section. One end of the stake must be sharpened or beveled to facilitate driving down into the underlying soil.

Matting shall meet the requirements of Article 1060-8 of the *Standard Specifications*, or shall meet specifications provided elsewhere in this contract.

Provide staples made of 0.125" diameter new steel wire formed into a *u* shape not less than 12" in length with a throat of 1" in width.

Polyacrylamide (PAM) shall be applied in powder form and shall be anionic or neutrally charged. Soil samples shall be obtained in areas where the wattles will be placed, and from offsite material used to construct the roadway, and analyzed for the appropriate PAM flocculant to be utilized with each wattle. The PAM product used shall be listed on the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Water Quality (DWQ) web site as an approved PAM product for use in North Carolina.

Construction Methods

Wattles shall be secured to the soil by wire staples approximately every 1 linear foot and at the end of each section of wattle. A minimum of 4 stakes shall be installed on the downstream side of the wattle with a maximum spacing of 2 linear feet along the wattle, and according to the detail. Install a minimum of 2 stakes on the upstream side of the wattle according to the detail provided in the plans. Stakes shall be driven into the ground a minimum of 10 in. with no more than 2 in. projecting from the top of the wattle. Drive stakes at an angle according to the detail provided in the plans.

Only install wattle(s) to a height in ditch so flow will not wash around wattle and scour ditch slopes and according to the detail provided in the plans and as directed. Overlap adjoining sections of wattles a minimum of 6 in.

Installation of matting shall be in accordance with the detail provided in the plans, and in accordance with Article 1631-3 of the *Standard Specifications*, or in accordance with specifications provided elsewhere in this contract.

Apply PAM over the lower center portion of the wattle where the water is going to flow over at a rate of 2 ounces per wattle, and 1 ounce of PAM on matting on each side of the wattle. PAM applications shall be done during construction activities after every rainfall event that is equal to or exceeds 0.50 in.

The Contractor shall maintain the wattles until the project is accepted or until the wattles are removed, and shall remove and dispose of silt accumulations at the wattles when so directed in accordance with the requirements of Section 1630 of the *Standard Specifications*.

Measurement and Payment

Wattles will be measured and paid for by the actual number of linear feet of wattles which are installed and accepted. Such price and payment will be full compensation for all work covered by this section, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to install the Wattles.

Matting will be measured and paid for in accordance with Article 1631-4 of the *Standard Specifications*, or in accordance with specifications provided elsewhere in this contract.

Polyacrylamide(PAM) will be measured and paid for by the actual weight in pounds of PAM applied to the wattles. Such price and payment will be full compensation for all work covered by this section, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to apply the *Polyacrylamide(PAM)*.

Payment will be made under:

Pay ItemPay UnitPolyacrylamide(PAM)PoundWattleLinear Foot

SILT FENCE WATTLE BREAK:

(8-21-12)

1605,1630

Description

Silt fence wattle breaks are tubular products consisting of excelsior fibers encased in synthetic netting and used in conjunction with temporary silt fence at the toe of fills to intercept runoff. Silt fence wattle breaks are to be placed at locations shown on the plans or as directed. Installation shall follow the detail provided in the plans and as directed. Work includes furnishing materials, installation, maintenance and removing silt fence wattle breaks.

Materials

Wattle shall meet the following specifications:

| 100% Curled Wood (Excelsior) Fibers | | |
|-------------------------------------|-------------------------------|--|
| Minimum Diameter | 12" | |
| Minimum Length | 10 ft | |
| Minimum Density | $2.5 \text{ lb/cf} \pm 10\%$ | |
| Net Material | Synthetic | |
| Net Openings | 1" x 1" | |
| Net Configuration | Totally Encased | |
| Minimum Weight | 20 lb. ± 10% per 10 ft length | |

Stakes shall be used as anchors. Provide hardwood stakes a minimum of 2-ft long with a 2" x 2" nominal square cross section. One end of the stake shall be sharpened or beveled to facilitate driving down into the underlying soil.

Provide staples made of 0.125" diameter new steel wire formed into a U-shape not less than 12" in length with a throat of 1" in width.

Construction Methods

Excavate a trench the entire length of each wattle with a depth of 1" to 2" for the wattle to be placed. Secure silt fence wattle breaks to the soil by wire staples approximately every linear foot and at the end of each wattle. Install at least 4 stakes on the downslope side of the wattle with a maximum spacing of 2 linear feet, and according to the detail. Install at least 2 stakes on the upslope side of the silt fence wattle break according to the detail provided in the plans. Drive stakes into the ground at least 10" with no more than 2" projecting from the top of the wattle. Drive stakes at an angle according to the detail provided in the plans.

Install temporary silt fence in accordance with Section 1605 of the 2012 Standard Specifications and overlap each downslope side of silt fence wattle break by 6".

Maintain the silt fence wattle breaks until the project is accepted or until the silt fence wattle breaks are removed, and remove and dispose of silt accumulations at the silt fence wattle breaks when so directed in accordance with Section 1630 of the 2012 Standard Specifications.

Measurement and Payment

Wattle will be measured and paid as the actual number of linear feet of wattles installed and accepted. Such price and payment will be full compensation for all work covered by this provision, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to install the silt fence wattle break.

Payment will be made under:

Pay ItemPay UnitWattleLinear Foot

WATTLE BARRIER:

(5-20-13) 1630

Description

Wattle barriers are tubular products consisting of excelsior fibers encased in natural or synthetic netting and used at the toe of fills or on slopes to intercept runoff. Wattle barriers are to be placed at locations shown on the plans or as directed. Installation shall follow the detail provided in the plans and as directed. Work includes furnishing materials, installation, maintenance and removing wattle barriers.

Materials

Wattle shall meet the following specifications:

| Inner Material | 100% Curled Wood (Excelsior) Fibers |
|------------------|-------------------------------------|
| Minimum Diameter | 18" |

| Minimum Length | 10 ft. |
|-------------------|-------------------|
| Minimum Density | 2.9 lb./c.f.± 10% |
| Net Material | Synthetic |
| Net Openings | 1" x 1" |
| Net Configuration | Totally Encased |
| Minimum Weight | 5 lb./ft. ± 10% |

Stakes shall be used as anchors. Provide hardwood stakes a minimum of 2-ft long with a 2" x 2" nominal square cross section. One end of the stake shall be sharpened or beveled to facilitate driving down into the underlying soil.

Provide staples made of 0.125" diameter new steel wire formed into a U-shape not less than 12" in length with a throat of 1" in width.

Construction Methods

Align wattle barriers in an overlapping and alternating pattern. Excavate a trench the entire length of each wattle with a depth of 2" to 3" for the wattle to be placed. Secure wattle barriers to the soil by wire staples approximately every linear foot and at the end of each wattle. Install at least 4 stakes on the downslope side of the wattle with a maximum spacing of 2 linear feet, and according to the detail. Install at least 2 stakes on the upslope side of the wattle barrier according to the detail provided in the plans. Drive stakes into the ground at least 10" with no more than 2" projecting from the top of the wattle. Drive stakes at an angle according to the detail provided in the plans.

For wattle barriers used to reduce runoff velocity for large slopes, use a maximum spacing of 25 ft. for the barrier measured along the slope.

Maintain the wattle barriers until the project is accepted or until the wattle barriers are removed, and remove and dispose of silt accumulations at the wattle barriers when so directed in accordance with Section 1630 of the 2012 Standard Specifications.

Measurement and Payment

Wattle Barrier will be measured and paid as the actual number of linear feet of wattles installed and accepted. Such price and payment will be full compensation for all work covered by this provision, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to install the wattle barrier.

Payment will be made under:

Pay ItemPay UnitWattle BarrierLinear Foot

BORROW PIT DEWATERING BASIN:

(3-17-09) (Rev 3-2-11)

Description

Water discharge from borrow pit sites shall not cause surface waters to exceed 50 NTUs (nephelometric turbidity unit) in streams not designated as trout waters and 10 NTUs in streams, lakes or reservoirs designated as trout waters. For lakes and reservoirs not designated as trout waters, the turbidity shall not exceed 25 NTUs. If the turbidity exceeds these levels due to natural background conditions, the existing turbidity level shall not be increased.

Construct, maintain and remove earth embankments used to reduce turbidity from dewatering borrow sites. Work includes providing porous coir fiber baffle, filtration geotextile, stone and outlet structures; cleaning out, maintaining, removing and disposing of the borrow pit dewatering basin and all components; and reshaping, dressing, seeding and mulching the area.

Materials

Refer to Division 10

| Item | Section |
|---------------------------------|---------|
| Riprap, Class A, B, 1, and 2 | 1042 |
| Geotextile for Drainage, Type 2 | 1056 |
| Coir Fiber Baffle | 1640-2 |

Use suitable excavated materials, as specified in Sections 225, 230 and 240 of the *Standard Specifications* in the construction of earth embankments for borrow pit dewatering basins, except where otherwise specified.

Construction Methods

Construct borrow pit dewatering basins according to the detail in the erosion control plans, and at locations shown on Reclamation Plans or in areas as directed.

The volume of the borrow pit dewatering basin will be based on a 2 hour retention time. The pump rate shall not exceed 1,000 GPM. The Contractor, at his option, may use a greater retention time for managing turbidity.

The straight line distance between the inlet and outlet shall be divided to include a forebay chamber in the upper quarter cell. Install one porous coir fiber baffle across the full width of the basin to delineate the forebay chamber. Do not use earthen or rock baffle. Install filtration geotextile on the interior side slopes and the floor of the forebay.

The water pumped from the borrow pit into the dewatering basin shall be obtained from the top of the water column and shall be discharged into the forebay in a non-erodible manner.

The borrow pit dewatering basin outlet shall be a vertical non-perforated riser pipe or flash board riser attached with a watertight connection to a barrel that carries the water through the embankment.

Maintenance and Removal

Maintain the borrow pit dewatering basin, coir fiber baffle, and remove and dispose of silt accumulations in accordance with Article 1630-3 of the *Standard Specifications*. The Contractor may include a drain device for maintenance and removal at his discretion.

Remove the borrow pit dewatering basin once dewatering operations are completed. Grade, seed, and mulch the area after removal of the borrow pit dewatering basin in accordance with Section 1660 of the *Standard Specifications*. The area shall be stabilized with an approved groundcover before final acceptance of the site.

Measurement and Payment

No direct payment will be made for borrow pit dewatering basins with the exception of the work of silt removal during dewatering basin operation and the work of seeding and mulching after removal of the dewatering basin. All other work and materials required for installation, maintenance and removal of borrow pit dewatering basins shall be incidental to *Borrow Excavation*. Such price and payments will be full compensation for the work of constructing, maintaining and removing the borrow pit dewatering basin including, but not limited to, the construction and removal of the borrow pit dewatering basin; furnishing of the outlet structure, baffle, filtration geotextile, stone and optional drain devices; and removal of all such items once dewatering operations are completed.

Removal and disposal of silt accumulations during dewatering operations will be measured and paid at the contract unit price per cubic yard for *Silt Excavation* in accordance with Article 1630-4 of the *Standard Specifications*.

Grading, seeding, and mulching the area after removal of the borrow pit dewatering basin will be measured and paid at the contract unit price per acre for *Seeding and Mulching* in accordance with Section 1660-8 of the *Standard Specifications*.

CULVERT DIVERSION CHANNEL:

Description

This work consists of providing a *Culvert Diversion Channel* to detour the existing stream around the culvert construction site at locations shown on the plans. Work includes constructing the diversion channel, disposing of excess materials, providing and placing geotextile liner, maintaining the diversion area in an acceptable condition, removing geotextile liner, backfilling diversion channel area with suitable material, and providing proper drainage when diversion channel area is abandoned.

Materials

Refer to Division 10

ItemSectionGeotextile for Soil Stabilization, Type 41056

Construction Methods

Grade channel according to the plans with channel surface free of obstructions, debris, and pockets of low-density material. Utilize suitable material and provide disposal area for unsuitable material.

Line channel with geotextile unrolled in the direction of flow and lay smoothly but loosely on soil surface without creases. Bury top of slope geotextile edge in a trench at least 5" deep and tamp securely. Make vertical overlaps a minimum of 18" with upstream geotextile overlapping the downstream geotextile.

Secure geotextile with eleven gauge wire staples shaped into a u shape with a length of not less than 6" and a throat not less than 1" in width. Place staples along outer edges and throughout the geotextile a maximum of 3 ft. horizontally and vertically.

Measurement and Payment

Culvert Diversion Channel will be measured and paid for as the actual number of cubic yards excavated, as calculated from the typical section throughout the length of the diversion channel as shown on the final approved plans.

Geotextile for Soil Stabilization will be measured and paid for in accordance with Article 270-4 of the *Standard Specifications*.

Such price and payment shall be considered full compensation for all work covered by this section including all materials, construction, maintenance, and removal of *Culvert Diversion Channel*.

Payment will be made under:

Pay Item
Culvert Diversion Channel
Cubic Yard

IMPERVIOUS DIKE:

Description

This work consists of furnishing, installing, maintaining, and removing an *Impervious Dike* for the purpose of diverting normal stream flow around the construction site. The Contractor shall

construct an impervious dike in such a manner approved by the Engineer. The impervious dike shall not permit seepage of water into the construction site or contribute to siltation of the stream. The impervious dike shall be constructed of an acceptable material in the locations noted on the plans or as directed.

Materials

Acceptable materials shall include but not be limited to sheet piles, sandbags, and/or the placement of an acceptable size stone lined with polypropylene or other impervious geotextile.

Earth material shall not be used to construct an impervious dike when it is in direct contact with the stream unless vegetation can be established before contact with the stream takes place.

Measurement and Payment

Impervious Dike will be measured and paid as the actual number of linear feet of impervious dike(s) constructed, measured in place from end to end of each separate installation that has been completed and accepted. Such price and payment will be full compensation for all work including but not limited to furnishing materials, construction, maintenance, and removal of the impervious dike.

Payment will be made under:

Pay Item
Impervious Dike
Linear Foot

TEMPORARY PIPE FOR CULVERT CONSTRUCTION:

Description

This work consists of furnishing, installing, maintaining and removing any and all temporary pipe used on this project in conjunction with the culvert construction.

Construction Methods

The Contractor shall install temporary pipe in locations shown on the plans in such a manner approved by the Engineer. The temporary pipe shall provide a passageway for the stream through the work-site. The minimum size requirements will be as stated on the erosion control plans.

Measurement and Payment

__" Temporary Pipe will be measured and paid for at the contract unit price per linear foot of temporary pipe approved by the Engineer and measured in place from end to end. Such price and payment will be full compensation for all work covered by this section including but not

limited to furnishing all materials required for installation, construction, maintenance, and removal of temporary pipe.

Payment will be made under:

Pay Item

__" Temporary Pipe

Linear Foot

COIR FIBER MAT:

Description

Furnish material, install and maintain coir fiber mat in locations shown on the plans or in locations as directed. Work includes providing all materials, excavating and backfilling, and placing and securing coir fiber mat with stakes, steel reinforcement bars or staples as directed.

Materials

ItemSectionCoir Fiber Mat1060-14

Anchors: Stakes, reinforcement bars, or staples shall be used as anchors.

Wooden Stakes:

Provide hardwood stakes 12"- 24" long with a 2" x 2" nominal square cross section. One end of the stake must be sharpened or beveled to facilitate driving through the coir fiber mat and down into the underlying soil. The other end of the stake needs to have a 1"- 2" long head at the top with a 1"- 2" notch following to catch and secure the coir fiber mat.

Steel Reinforcement Bars:

Provide uncoated #10 steel reinforcement bars 24" nominal length. The bars shall have a 4" diameter bend at one end with a 4" straight section at the tip to catch and secure the coir fiber mat.

Staples:

Provide staples made of 0.125" diameter new steel wire formed into a u shape not less than 12" in length with a throat of 1" in width.

Construction Methods

Place the coir fiber mat immediately upon final grading. Provide a smooth soil surface free from stones, clods, or debris that will prevent the contact of the mat with the soil. Unroll the mat and apply without stretching such that it will lie smoothly but loosely on the soil surface.

For stream relocation applications, take care to preserve the required line, grade, and cross section of the area covered. Bury the top slope end of each piece of mat in a narrow trench at least 6 in. deep and tamp firmly. Where one roll of matting ends and a second roll begins, overlap the end of the upper roll over the buried end of the second roll so there is a 6 in. overlap. Construct check trenches at least 12 in. deep every 50 ft. longitudinally along the edges of the mat or as directed. Fold over and bury mat to the full depth of the trench, close and tamp firmly. Overlap mat at least 6 in. where 2 or more widths of mat are installed side by side.

Place anchors across the mat at the ends approximately 1 ft. apart. Place anchors along the outer edges and down the center of the mat 3 ft. apart.

Adjustments in the trenching or anchoring requirements to fit individual site conditions may be required.

Measurement and Payment

Coir Fiber Mat will be measured and paid for as the actual number of square yards measured along the surface of the ground over which coir fiber mat is installed and accepted.

No measurement will be made for anchor items.

Payment will be made under:

Pay ItemPay UnitCoir Fiber MatSquare Yard

CONCRETE WASHOUT STRUCTURE:

(12-01-15)

Description

Concrete washout structures are enclosures above or below grade to contain concrete waste water and associated concrete mix from washing out ready-mix trucks, drums, pumps, or other equipment. Concrete washouts must collect and retain all the concrete washout water and solids, so that this material does not migrate to surface waters or into the ground water. These enclosures are not intended for concrete waste not associated with wash out operations.

The concrete washout structure may include constructed devices above or below ground and or commercially available devices designed specifically to capture concrete waste water.

Materials

ItemSectionTemporary Silt Fence1605

Safety Fence shall meet the specifications as provided elsewhere in this contract.

Geomembrane basin liner shall meet the following minimum physical properties for low permeability; it shall consist of a polypropylene or polyethylene 10 mil think geomembrane. If the minimum setback dimensions can be achieved the liner is not required. (5 feet above groundwater, 50 feet from top of bank of perennial stream, other surface water body, or wetland.)

Construction Methods

Build an enclosed earthen berm or excavate to form an enclosure in accordance with the details and as directed.

Install temporary silt fence around the perimeter of the enclosure in accordance with the details and as directed if structure is not located in an area where existing erosion and sedimentation control devices are capable to containing any loss of sediment.

Post a sign with the words "Concrete Washout" in close proximity of the concrete washout area, so it is clearly visible to site personnel.

The construction details for the above grade and below grade concrete washout structures can be found on the following web page link:

http://www.ncdot.gov/doh/operations/dp_chief_eng/roadside/soil_water/details/

Alternate details for accommodating concrete washout may be submitted for review and approval.

The alternate details shall include the method used to retain and dispose of the concrete waste water within the project limits and in accordance with the minimum setback requirements. (5 feet above groundwater, 50 feet from top of bank of perennial stream, other surface water body, or wetland.)

Maintenance and Removal

Maintain the concrete washout structure(s) to provide adequate holding capacity plus a minimum freeboard of 12 inches. Remove and dispose of hardened concrete and return the structure to a functional condition after reaching 75% capacity.

Inspect concrete washout structures for damage and maintain for effectiveness.

Remove the concrete washout structures and sign upon project completion. Grade the earth material to match the existing contours and permanently seed and mulch area.

Measurement and Payment

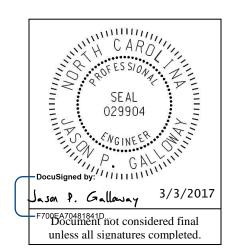
Concrete Washout Structure will be paid for per each enclosure installed in accordance with the details. If alternate details are approved then those details will also be paid for per each approved and installed device.

Temporary Silt Fence will be measured and paid for in accordance with Article 1605-5 of the Standard Specifications.

No measurement will be made for other items or for over excavation or stockpiling.

Payment will be made under:

Pay Item
Concrete Washout Structure
Each



Signals and Intelligent Transportation Systems Project Special Provisions (Version 12.5)

Prepared By: KGP, Jr./JPG 27-Feb-17

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1. 2012 STANDARD SPECIFICATIONS FOR ROADS & STRUCTURES

The 2012 <u>Standard Specifications</u> are revised as follows:

1.1. Submittal Requirements (1098-1(B))

Page 10-208, replace paragraph on line 34 with the following:

Submit for approval catalog cuts and/or shop drawings for materials proposed for use on the project. Allow 40 days for review of each submittal. Do not fabricate or order material until receipt of Engineer's approval.

Submit 4 copies of each catalog cut and/or drawing and show for each component the material description, brand name, stock-number, size, rating, manufacturing specification and the intended use (identified by labeling all components with the corresponding contract line item number). Present the submittals neatly arranged in the same order as the contract bid items. Electronic submittals of catalog cuts and drawings may be accepted in lieu of hard copies.

One hard copy and an electronic (PDF) copy of reviewed submittals will be returned to the Engineer from the ITS and Signals Unit.

1.2. Junction Boxes (1098-5)

Page 10-212, sub-Section 1098-5(C) Oversized Junction Boxes

Revise sentence to read, "Provide oversized junction boxes and covers with minimum inside dimensions of 28"(1) x 15"(w) x 22"(h)."

1.3. Controllers with Cabinets – Material (1751-2)

Page 17-37, Section 1751-2 Material

Add the following paragraph:

When the plans or specifications require a Type 2070L controller, contractor may provide a Type 2070E controller. Unless otherwise allowed by the Engineer, provide controllers of only one type.

2. SIGNAL HEADS

2.1. MATERIALS

A. General:

Fabricate vehicle signal head housings and end caps from die-cast aluminum. Fabricate 12-inch and 16-inch pedestrian signal head housings and end caps from die-cast aluminum. Fabricate 9-inch pedestrian signal head housings, end caps, and visors from virgin polycarbonate material. Provide visor mounting screws, door latches, and hinge pins fabricated from stainless steel. Provide interior screws, fasteners, and metal parts fabricated from stainless steel.

Fabricate tunnel and traditional visors from sheet aluminum.

Paint all surfaces inside and outside of signal housings and doors. Paint outside surfaces of tunnel and traditional visors, wire outlet bodies, wire entrance fitting brackets and end caps when supplied as components of messenger cable mounting assemblies, pole and pedestal mounting assemblies, and pedestrian pushbutton housings. Have electrostatically-applied, fused-polyester paint in highway yellow (Federal Standard 595C, Color Chip Number 13538) a minimum of 2.5 to 3.5 mils thick. Do not apply paint to the latching hardware, rigid vehicle signal head mounting brackets for mast-arm attachments, messenger cable hanger components or balance adjuster components.

Have the interior surfaces of tunnel and traditional visors painted an alkyd urea black synthetic baking enamel with a minimum gloss reflectance and meeting the requirements of MIL-E-10169, "Enamel Heat Resisting, Instrument Black."

Where required, provide polycarbonate signal heads and visors that comply with the provisions pertaining to the aluminum signal heads listed on the QPL with the following exceptions:

Fabricate signal head housings, end caps, and visors from virgin polycarbonate material. Provide UV stabilized polycarbonate plastic with a minimum thickness of 0.1 ± 0.01 inches that is highway yellow (Federal Standard 595C, Color Chip 13538). Ensure the color is incorporated into the plastic material before molding the signal head housings and end caps. Ensure the plastic formulation provides the following physical properties in the assembly (tests may be performed on separately molded specimens):

| Test | Required | Method |
|--|--------------------|------------|
| Specific Gravity | 1.17 minimum | ASTM D 792 |
| Flammability | Self-extinguishing | ASTM D 635 |
| Tensile Strength, yield, PSI | 8500 minimum | ASTM D 638 |
| Izod impact strength, ft-lb/in [notched, 1/8 inch] | 12 minimum | ASTM D 256 |

For pole mounting, provide side of pole mounting assemblies with framework and all other hardware necessary to make complete, watertight connections of the signal heads to the poles and pedestals. Fabricate the mounting assemblies and frames from aluminum with all necessary hardware, screws, washers, etc. to be stainless steel. Provide mounting fittings that match the positive locking device on the signal head with the serrations integrally cast into the brackets. Provide upper and lower pole plates that have a 1 ¼-inch vertical conduit entrance hubs with the hubs capped on the lower plate and 1 ½-inch horizontal hubs. Ensure that the assemblies provide rigid attachments to poles and pedestals so as to allow no twisting or swaying of the signal heads. Ensure that all raceways are free of sharp edges and protrusions, and can accommodate a minimum of ten Number 14 AWG conductors.

For pedestal mounting, provide a post-top slipfitter mounting assembly that matches the positive locking device on the signal head with serrations integrally cast into the slipfitter. Provide stainless steel hardware, screws, washers, etc. Provide a minimum of six 3/8 X 3/4-inch long square head bolts for attachment to pedestal. Provide a center post for multi-way slipfitters.

For light emitting diode (LED) traffic signal modules, provide the following requirements for inclusion on the Department's Qualified Products List for traffic signal equipment.

- 1. Sample submittal,
- 2. Third-party independent laboratory testing results for each submitted module with evidence of testing and conformance with all of the Design Qualification Testing specified in section 6.4 of each of the following Institute of Transportation Engineers (ITE) specifications:
 - Vehicle Traffic Control Signal Heads Light Emitting Diode (LED) Circular Signal Supplement
 - Vehicle Traffic Control Signal Heads Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Supplement

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 Pedestrian Traffic Control Signal Indications –Light Emitting Diode (LED) Signal Modules.

(Note: The Department currently recognizes two approved independent testing laboratories. They are Intertek ETL Semko and Light Metrics, Incorporated with Garwood Laboratories. Independent laboratory tests from other laboratories may be considered as part of the QPL submittal at the discretion of the Department,

- 3. Evidence of conformance with the requirements of these specifications,
- 4. A manufacturer's warranty statement in accordance with the required warranty, and
- 5. Submittal of manufacturer's design and production documentation for the model, including but not limited to, electrical schematics, electronic component values, proprietary part numbers, bill of materials, and production electrical and photometric test parameters.
- 6. Evidence of approval of the product to bear the Intertek ETL Verified product label for LED traffic signal modules.

In addition to meeting the performance requirements for the minimum period of 60 months, provide a written warranty against defects in materials and workmanship for the modules for a period of 60 months after installation of the modules. During the warranty period, the manufacturer must provide new replacement modules within 45 days of receipt of modules that have failed at no cost to the State. Repaired or refurbished modules may not be used to fulfill the manufacturer's warranty obligations. Provide manufacturer's warranty documentation to the Department during evaluation of product for inclusion on Qualified Products List (QPL).

B. Vehicle Signal Heads:

Comply with the ITE standard "Vehicle Traffic Control Signal Heads". Provide housings with provisions for attaching backplates.

Provide visors that are 8 inches in length for 8-inch vehicle signal head sections. Provide visors that are 10 inches in length for 12-inch vehicle signal heads.

Provide a termination block with one empty terminal for field wiring for each indication plus one empty terminal for the neutral conductor. Have all signal sections wired to the termination block. Provide barriers between the terminals that have terminal screws with a minimum Number 8 thread size and that will accommodate and secure spade lugs sized for a Number 10 terminal screw.

Mount termination blocks in the yellow signal head sections on all in-line vehicle signal heads. Mount the termination block in the red section on five-section vehicle signal heads.

Furnish vehicle signal head interconnecting brackets. Provide one-piece aluminum brackets less than 4.5 inches in height and with no threaded pipe connections. Provide hand holes on the bottom of the brackets to aid in installing wires to the signal heads. Lower brackets that carry no wires and are used only for connecting the bottom signal sections together may be flat in construction.

For messenger cable mounting, provide messenger cable hangers, wire outlet bodies, balance adjusters, bottom caps, wire entrance fitting brackets, and all other hardware necessary to make complete, watertight connections of the vehicle signal heads to the messenger cable. Fabricate messenger cable hanger components, wire outlet bodies and balance adjuster components from stainless steel or malleable iron galvanized in accordance with ASTM A153 (Class A) or ASTM A123. Provide serrated rings made of aluminum. Provide messenger cable hangers with U-bolt

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clamps. Fabricate washers, screws, hex-head bolts and associated nuts, clevis pins, cotter pins, U-bolt clamps and nuts from stainless steel.

For mast-arm mounting, provide rigid vehicle signal head mounting brackets and all other hardware necessary to make complete, watertight connections of the vehicle signal heads to the mast arms and to provide a means for vertically adjusting the vehicle signal heads to proper alignment. Fabricate the mounting assemblies from aluminum, and provide serrated rings made of aluminum. Provide stainless steel cable attachment assemblies to secure the brackets to the mast arms. Ensure all fastening hardware and fasteners are fabricated from stainless steel.

Provide LED vehicular traffic signal modules (hereafter referred to as modules) that consist of an assembly that uses LEDs as the light source in lieu of an incandescent lamp for use in traffic signal sections. Use LEDs that are aluminum indium gallium phosphorus (AlInGaP) technology for red and yellow indications and indium gallium nitride (InGaN) for green indications. Install the ultra bright type LEDs that are rated for 100,000 hours of continuous operation from -40°F to +165°F. Design modules to have a minimum useful life of 60 months and to meet all parameters of this specification during this period of useful life.

For the modules, provide spade terminals crimped to the lead wires and sized for a #10 screw connection to the existing terminal block in a standard signal head. Do not provide other types of crimped terminals with a spade adapter.

Ensure the power supply is integral to the module assembly. On the back of the module, permanently mark the date of manufacture (month & year) or some other method of identifying date of manufacture.

Tint the red, yellow and green lenses to correspond with the wavelength (chromaticity) of the LED. Transparent tinting films are unacceptable. Provide a lens that is integral to the unit with a smooth outer surface.

1. LED Circular Signal Modules:

Provide modules in the following configurations: 12-inch circular sections, and 8-inch circular sections. All makes and models of LED modules purchased for use on the State Highway System shall appear on the current NCDOT Traffic Signal Qualified Products List (QPL).

Provide the manufacturer's model number and the product number (assigned by the Department) for each module that appears on the 2012 or most recent Qualified Products List. In addition, provide manufacturer's certification in accordance with Article 106-3 of the *Standard Specifications*, that each module meets or exceeds the ITE "Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement" dated June 27, 2005 (hereafter referred to as VTCSH Circular Supplement) and other requirements stated in this specification.

Provide modules that meet the following requirements when tested under the procedures outlined in the VTCSH Circular Supplement:

| Module Type | Max. Wattage at 165° F | Nominal Wattage at 77° F |
|------------------------|------------------------|--------------------------|
| 12-inch red circular | 17 | 11 |
| 8-inch red circular | 13 | 8 |
| 12-inch green circular | 15 | 15 |

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| 8-inch green circular | 12 | 12 |
|-----------------------|----|----|
| | | |

For yellow circular signal modules, provide modules tested under the procedures outlined in the VTCSH Circular Supplement to insure power required at 77° F is 22 Watts or less for the 12-inch circular module and 13 Watts or less for the 8-inch circular module.

Note: Use a wattmeter having an accuracy of $\pm 1\%$ to measure the nominal wattage and maximum wattage of a circular traffic signal module. Power may also be derived from voltage, current and power factor measurements.

2. LED Arrow Signal Modules

Provide 12-inch omnidirectional arrow signal modules. All makes and models of LED modules purchased for use on the State Highway System shall appear on the current NCDOT Traffic Signal Qualified Products List (QPL).

Provide the manufacturer's model number and the product number (assigned by the Department) for each module that appears on the 2012 or most recent Qualified Products List. In addition, provide manufacturer's certification in accordance with Article 106-3 of the *Standard Specifications*, that each module meets or exceeds the requirements for 12-inch omnidirectional modules specified in the ITE "Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Supplement" dated July 1, 2007 (hereafter referred to as VTCSH Arrow Supplement) and other requirements stated in this specification.

Provide modules that meet the following requirements when tested under the procedures outlined in the VTCSH Arrow Supplement:

| Module Type | Max. Wattage at 165° F | Nominal Wattage at 77° F |
|---------------------|------------------------|--------------------------|
| 12-inch red arrow | 12 | 9 |
| 12-inch green arrow | 11 | 11 |

For yellow arrow signal modules, provide modules tested under the procedures outlined in the VTCSH Arrow Supplement to insure power required at 77° F is 12 Watts or less.

Note: Use a wattmeter having an accuracy of $\pm 1\%$ to measure the nominal wattage and maximum wattage of an arrow traffic signal module. Power may also be derived from voltage, current and power factor measurements.

3. LED U-Turn Arrow Signal Modules:

Provide modules in the following configurations: 12-inch left u-turn arrow signal modules and 12-inch right u-turn arrow signal modules.

Modules are not required to be listed on the ITS and Signals Qualified Products List. Provide manufacturer's certification in accordance with Article 106-3 of the *Standard Specifications*, that each module meets or exceeds the ITE "Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement" dated June 27, 2005 (hereafter referred to as VTCSH Circular Supplement) and other requirements stated in this specification.

Provide modules that have minimum maintained luminous intensity values that are not less than 16% of the values calculated using the method described in section 4.1 of the VTCSH Circular Supplement.

Provide modules that meet the following requirements when tested under the procedures outlined in the VTCSH Circular Supplement:

| Module Type | Max. Wattage at 165° F | Nominal Wattage at 77° F |
|----------------------------|------------------------|--------------------------|
| 12-inch red u-turn arrow | 17 | 11 |
| 12-inch green u-turn arrow | 15 | 15 |

For yellow u-turn arrow signal modules, provide modules tested under the procedures outlined in the VTCSH Circular Supplement to ensure power required at 77° F is 22 Watts or less.

Note: Use a wattmeter having an accuracy of $\pm 1\%$ to measure the nominal wattage and maximum wattage of a circular traffic signal module. Power may also be derived from voltage, current and power factor measurements.

C. Signal Cable:

Furnish 16-4 and 16-7 signal cable that complies with IMSA specification 20-1 except provide the following conductor insulation colors:

- For 16-4 cable: white, yellow, red, and green
- For 16-7 cable: white, yellow, red, green, yellow with black stripe tracer, red with black stripe tracer, and green with black stripe tracer. Apply continuous stripe tracer on conductor insulation with a longitudinal or spiral pattern.

Provide a ripcord to allow the cable jacket to be opened without using a cutter. IMSA specification 19-1 will not be acceptable. Provide a cable jacket labeled with the IMSA specification number and provide conductors constructed of stranded copper.

3. VIDEO IMAGING LOOP EMULATOR DETECTOR SYSTEMS

3.1. DESCRIPTION

Design, furnish, provide training, and install video imaging loop emulator detection systems with all necessary hardware in accordance with the plans and specifications.

Unless otherwise specified in the contract, all loop emulator detection equipment will remain the property of the contractor.

3.2. MATERIALS

A. General:

Material and equipment furnished under this section must be pre-approved on the Department's QPL by the date of installation except miscellaneous hardware such as cables and mounting hardware do not need to be pre-approved.

Used equipment will be acceptable provided the following conditions have been met:

- Equipment is listed on the current QPL.
- Equipment is in good working condition.
- Equipment is to remain the property of the contractor.

Ensure that software is licensed for use by the Department and by any other agency responsible for maintaining or operating the loop emulation system. Provide the Department with a license to duplicate and distribute the software as necessary for design and maintenance support.

Design and furnish video imaging loop emulator detection systems that detect vehicles at signalized intersections by processing video images and providing detection outputs to the signal controller in real time (within 112 milliseconds of vehicle arrival).

Furnish all required camera sensor units, loop emulator processor units, hardware and software packages, cabling, poles, mast arms, harnesses, camera mounting assemblies, surge protection panels, grounding systems, messenger cable and all necessary hardware. Furnish systems that allow the display of detection zones superimposed on an image of the roadway on a Department-furnished monitor or laptop computer screen. Ensure detection zones can be defined and data entered using a simple keyboard or mouse and monitor, or using a laptop PC with software.

Provide design drawings showing design details and camera sensor unit locations for review and acceptance before installation. Provide mounting height and location requirements for camera sensor units on the design based on site survey. Design video imaging loop emulator detection systems with all necessary hardware. Indicate all necessary poles, spans, mast arms, luminaire arms, cables, camera mounting assemblies and hardware to achieve the required detection zones where Department owned poles are not adequate to locate the camera sensor units. Do not design for the installation of poles in medians.

Obtain the Engineer's approval before furnishing video imaging loop emulator detection systems. The contractor is responsible for the final design of video imaging loop emulator detection systems. Review and acceptance of the designs by the Department does not relieve the contractor from the responsibility to provide fully functional systems and to ensure that the required detection zones can be provided.

Provide the ability to program each detection call (input to the controller) with the following functions:

- Full Time Delay Delay timer is active continuously,
- Normal Delay Delay timer is inhibited when assigned phase is green (except when used with TS 2 and 170/2070L controllers),
- Extend Call is extended for this amount of time after vehicle leaves detection area,
- Delay Call/Extend Call This feature uses a combination of full time delay and extend time
 on the same detection call. Ensure operation is as follows: Vehicle calls are received after the
 delay timer times out. When a call is detected, it is held until the detection area is empty and
 the programmed extend time expires. If another vehicle enters the detection area before the
 extend timer times out, the call is held and the extend time is reset. When the extend timer
 times out, the delay timer has to expire before another vehicle call can be received.

Provide the ability to program each detection zone as one of the following functions:

- Presence detector.
- Directional presence detector,
- Pulse detector,
- Directional pulse detector.

Ensure previously defined detector zones and configurations can be edited.

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Provide each individual system with all the necessary equipment to focus and zoom the camera lenses without the need to enter the camera enclosure.

Provide systems that allow for the placement of at least 8 detection zones within the combined field of view of a single camera sensor unit. Provide a minimum of 8 detection outputs per camera.

Provide detection zones that can be overlapped. Ensure systems reliably detect vehicles when the horizontal distance from the camera sensor unit to the detection zone area is less than ten times the mounting height of the sensor. Ensure systems detect vehicles in multiple travel lanes.

Ensure systems can detect vehicle presence within a 98 to 102 percent accuracy (up to 2 percent of the vehicles missed and up to 2 percent of false detection) for clear, dry, daylight conditions, a 96 to 105 percent accuracy (up to 4 percent of the vehicles missed and up to 5 percent false detection) for dawn and dusk conditions, and a 96 percent accuracy (up to 4 percent of the vehicles missed) for night and adverse conditions (fog, snow, rain, etc.) using standard sensor optics and in the absence of occlusion.

Repair and replace all failed components within 72 hours.

The Department may conduct field-testing to ensure the accuracy of completed video imaging loop emulator detection systems.

B. Loop Emulator System:

Furnish loop emulator systems that receive and simultaneously process information from camera sensor units, and provides detector outputs to signal controllers.

Ensure systems provide the following:

- Operate in a typical roadside environment and meet the environmental specifications and are fully compatible with NEMA TS 1, NEMA TS 2, or Type 170/2070L controllers and cabinets.
- provide a "fail-safe" mode whereby failure of one or more of the camera sensor units or
 power failure of the loop emulator system will cause constant calls to be placed on the
 affected vehicle detection outputs to the signal controller,
- provide compensation for minor camera movement of up to 2 percent of the field of view at 400 feet without falsely detecting vehicles,
- process the video at a minimum rate of 30 times per second,
- provide separate wired connectors inside the controller cabinet for video recording each camera,
- provide remote video monitoring with a minimum refresh rate at 1 frame per second over a standard dial-up telephone line,
- provide remote video detection monitoring.

Furnish camera sensor units that comply with the following:

- have an output signal conforming to EIA RS-170 standard,
- have a nominal output impedance of 75 ohms,

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- be immune to bright light sources, or have built in circuitry or protective devices to prevent damage to the sensor when pointed directly at strong light sources,
- be housed in a light colored environmental enclosure that is water proof and dust tight, and that conforms to NEMA-4 specifications or better,
- simultaneously monitor at least five travel lanes when placed at the proper mounting location with a zoom lens.
- have a sunshield attached to the environmental enclosure to minimize solar heating,
- meet FCC class B requirements for electromagnetic interference emissions,
- have a heater attached to the viewing window of the environmental enclosure to prevent ice and condensation in cold weather.

Where coaxial video cables and other cables are required between the camera sensor and other components located in the controller cabinet, furnish surge protection in the controller cabinet.

If furnishing coaxial communications cable comply with the following, as recommended by the approved loop emulator manufacturer:

- Number 20 AWG, solid bare copper conductor terminated with crimped-on BNC connectors (do not use BNC adapters) from the camera sensor to the signal controller cabinet.
- Number 22 AWG, stranded bare copper conductor terminated with crimped-on BNC connectors (do not use BNC adapters) from the camera sensor unit to the junction box, and within the signal controller cabinet.

Furnish power cable appropriately sized to meet the power requirements of the sensors. At a minimum, provide three conductor 120 VAC field power cable.

As determined during the site survey, furnish sensor junction boxes with nominal 6 x 10 x 6 inches dimensions at each sensor location. Provide terminal blocks and tie points for coaxial cable.

C. Video Imaging Loop Emulator System Support:

Furnish video imaging loop emulator systems with either a simple keyboard or a mouse with monitor and appropriate software, or with system software for use on department-owned laptop PCs. Ensure the system is Windows 2000 and Windows XP compatible.

Provide Windows 2000 and Windows XP compatible personal computer software, if needed, to provide remote video and video detection monitoring.

Ensure systems allow the user to edit previously defined detector configurations. When a vehicle is within a detection zone, provide for a change in color or intensity of the detection zone perimeter or other appropriate display changes on the Department-furnished monitor or laptop computer screen.

Provide cabling and interconnection hardware with 6-foot minimum length interconnection cable to interface with the system.

Provide all associated equipment manuals and documentation.

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3.3. CONSTRUCTION METHODS

Arrange and conduct site surveys with the system manufacturer's representative and Department personnel to determine proper camera sensor unit selection and placement. Provide the Department at least 3 working days notice before conducting site surveys. Upon completion of the site surveys the Department will provide revised plans reflecting the findings of the site survey.

Before beginning work at locations requiring video imaging loop emulator detection systems, furnish system software. Upon activation of detection zones, provide detector configuration files. Ensure that up-to-date detection configuration files are furnished for various detection zone configurations that may be required for construction phasing.

Place into operation loop emulator detection systems. Configure loop emulator detection systems to achieve required detection in designated zones. Have a certified manufacturer's representative on site to supervise and assist with installation, set up, and testing of the system.

Install the necessary processing and communications equipment in the signal controller cabinet. Make all necessary modifications to install equipment, cabling harnesses, and camera sensor interface panels with surge suppression.

Perform modifications to camera sensor unit gain, sensitivity, and iris limits necessary to complete the installation.

Do not install camera sensor units on signal poles unless approved by the Engineer.

Install the necessary cables from each sensor to the signal controller cabinet along signal cabling routes. Install surge protection and terminate all cable conductors.

Relocate camera sensor units and reconfigure detection zones as necessary according to the plans for construction phases.

Provide at least 8 hours of training on the set up, operation, troubleshooting, and maintenance of the loop emulator detection system to a maximum of ten Department personnel. Arrange for training to be conducted by the manufacturer's representative at an approved site within the Division responsible for administration of the project. Thirty days before conducting training submit a detailed course curriculum, draft manuals and materials, and resumes. Obtain approval of the submittal before conducting the training. At least one week before beginning training, provide three sets of complete documentation necessary to maintain and operate the system. Do not perform training until installation of loop emulator detection systems is complete.

3.4. MEASUREMENT AND PAYMENT

Actual number of site surveys, arranged, conducted, and accepted.

Actual number of luminaire arms for video systems furnished, installed, and accepted.

Actual number of cameras without internal loop emulator processing units furnished, installed, and accepted.

Actual number of external loop emulator processing units furnished, installed, and accepted.

Actual number of camera sensor units relocated with detection zones reconfigured installed, and accepted.

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No measurement will be made of video imaging loop emulator system support or training, power and video cables, and trenching as these items will be considered incidental to furnishing and installing video imaging loop emulator detection systems.

Payment will be made under:

| Site Survey | Each |
|---|------|
| Luminaire Arm for Video System | |
| Camera without Internal Loop Emulator Processing Unit | |
| External Loop Emulator Processing Unit | |
| Relocate Camera Sensor Unit | |

4. MODIFY SPREAD SPECTRUM WIRELESS RADIO

4.1. DESCRIPTION

Make modifications to existing Spread Spectrum Radio installations.

4.2. MATERIALS

Material, equipment, and hardware furnished under this section shall be pre-approved on the Departments' QPL.

Reference Article 1098-18 "Spread Spectrum Wireless Radio" of the Standard Specifications for Roads and Structures.

4.3.CONSTRUCTION METHODS

This item of work involves making modifications to existing wireless installations which include relocating an existing radio from an existing cabinet to a new cabinet, and/or relocating existing components of the radio system from an existing pole to new poles (wood poles, metal strain poles, metal poles with mast arms, etc.). This item of work includes, but may not be limited to, the following:

Relocating existing radio from an existing cabinet to a new cabinet

Relocating or installing new Coaxial Cable

Furnishing and installing new N-Type Connectors

Furnishing new Coaxial Cable and Shield Grounding Kits

Relocating Antenna Mounting Hardware

Relocating Antennas

This item of work may also involve converting an existing standalone radio site to a repeater site. This item of work includes, but may not be limited to, the following:

Furnishing and installing new antenna(s)

Furnishing and installing new antenna mounting hardware kits

Furnishing and installing new 6 foot coaxial cable jumpers with N-Type Connectors

Furnishing and installing new coaxial cable – power divider (Splitters)

4.4. MEASUREMENT AND PAYMENT

Modify Radio Installation will be measured as the actual number of modified radio installations that are modified and accepted.

This item includes relocating the radio, and furnishing and/or relocating and installing coaxial cable, N-Type Connectors, coaxial cable shield grounding kits, antenna mounting hardware, antennas, coaxial cable and power dividers. This item of work may also involve furnishing and installing new decals and furnishing or relocating signs. This item of work may also involve re-programming the radio.

Payment for new risers will be covered separately.

Payment will be made under:

Modify Radio InstallationEach

5. TRAFFIC SIGNAL SUPPORTS

5.1. METAL TRAFFIC SIGNAL SUPPORTS – ALL POLES

A. General:

Furnish and install metal strain poles and metal poles with mast arms, grounding systems, and all necessary hardware. The work covered by this special provision includes requirements for the design, fabrication, and installation of both standard and custom/site specifically designed metal traffic signal supports and associated foundations.

Provide metal traffic signal support systems that contain no guy assemblies, struts, or stay braces. Provide designs of completed assemblies with hardware that equals or exceeds AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals* 6th Edition, 2013 (hereafter called 6th Edition AASHTO), including the latest interim specifications. Provide assemblies with a round or near-round (18 sides or more) cross-section, or a multi sided cross section with no less than six sides. The sides may be straight, convex, or concave.

Pole heights shown on signal plans are estimated from available data for bid purposes. Prior to furnishing metal signal poles, use field measurements and adjusted cross-sections to determine whether pole heights are sufficient to obtain required clearances. If pole heights are not sufficient, the Contractor should immediately notify the Engineer of the required revised pole heights.

Ensure that metal signal poles permit cables to be installed inside poles and any required mast arms. For holes in the poles and arms used to accommodate cables, provide full-circumference grommets. Arm flange plate wire access holes should be deburred, non grommeted, and oversized to fit around the 2" diameter grommeted shaft flange plate wire access hole.

After fabrication, have steel poles, required mast arms, and all parts used in the assembly hot-dip galvanized per section 1076. Design structural assemblies with weep holes large enough and properly located to drain molten zinc during the galvanization process. Provide hot-dip galvanizing on structures that meets or exceeds ASTM Standard A-123. Provide galvanizing on hardware that meets or exceeds ASTM Standard A-153. Ensure that threaded material is brushed and retapped as necessary after galvanizing. Perform repair of damaged galvanizing that complies with the following:

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Repair of GalvanizingArticle 1076-7

Standard Drawings for Metal Poles are available that supplement these project special provisions. These drawings are located on the Department's website:

https://connect.ncdot.gov/resources/safety/pages/ITS-Design-Resources.aspx

Comply with article 1098-1B of the 2012 STANDARD SPECIFICATIONS FOR ROADS & STRUCTURES, hereinafter referred to as the Standard Specifications for submittal requirements. Furnish shop drawings for approval. Provide the copies of detailed shop drawings for each type of structure as summarized below. Ensure that shop drawings include material specifications for each component and identify welds by type and size on the detail drawing only, not in table format. Do not release structures for fabrication until shop drawings have been approved by NCDOT. Provide an itemized bill of materials for all structural components and associated connecting hardware on the drawings.

Comply with article 1098-1A of the *Standard Specifications* for Qualified Products List (QPL) submittals. All shop drawings must include project location description, signal inventory number(s) and a project number or work order number on the drawings.

Summary of information required for metal pole review submittal:

| Item | Hardcopy Submittal | Electronic Submittal | Comments / Special Instructions |
|---|-----------------------|-------------------------|---|
| Sealed, Approved Signal Plan/Loading Diagram | 1 | 1 | All structure design information needs to reflect the latest approved signal plans |
| Custom Pole Shop Drawings | 4 sets | 1 set | Show NCDOT inventory number(s), contractor's name and relevant revision number in the title block. All drawings must have a unique <u>drawing</u> number for each project and identified for multiple pages. |
| Standard Pole Shop Drawings (from the QPL) | 4 sets | 1 set | Submit drawings on 11" x 17" format media. Show NCDOT inventory number(s), contractor's name and relevant revision number in the title block. All drawings must have a <u>unique drawing</u> number for each project and identified for multiple pages. |
| Structure Calculations | 1 set | 1 set | Not required for Standard QPL Poles |
| Standard Pole Foundation Drawings | 1 set | 1 set | Submit drawings on 11" x 17" format media. Submit a completed Standard Foundation Selection form for each pole using foundation table on Metal Pole Drawing M-8. |
| Custom Foundation Drawings | 4 sets | 1 set | Submit drawings on 11" x 17" format media. Show NCDOT inventory number(s), contractor's name and relevant revision number in the title block. All drawings must have a <u>unique drawing</u> number for each project and identified for |

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| | | | multiple pages. If QPL Poles are used, include the corresponding QPL pole shop drawings with this submittal. |
|--------------------------------|---|---|--|
| Foundation Calculations | 1 | 1 | Submit copies of LPILE input, output and pile tip deflection graph per Section 11.4 of this specification for each foundation. Not required for Standard QPL Poles |
| Soil Boring Logs and Report | 1 | 1 | Report should include a location plan and a soil classification report including soil capacity, water level, hammer efficiency, soil bearing pressure, soil density, etc. for each pole. |

NOTE – All shop drawings and custom foundation design drawings must be sealed by a Professional Engineer licensed in the state of North Carolina. All geotechnical information must be sealed by either a Professional Engineer or geologist licensed in the state of North Carolina. Include a title block and revision block on the shop drawings and foundation drawings showing the NCDOT inventory number.

Shop drawings and foundation drawings may be submitted together or separately for approval. However, shop drawings must be approved before foundations can be reviewed. Foundation designs will be returned without review if the associated shop drawing has not been approved. Boring reports should include the following: Engineer's summary, boring location maps, soil classification per AASHTO Classification System, hammer efficiency, and Metal Pole Standard Foundation Selection Form. Incomplete submittals will be returned without review. The Reviewer has the right to request additional analysis and copies of the calculations to expedite the approval process.

B. Materials:

Fabricate metal pole and arm shaft from coil or plate steel to meet the requirements of ASTM A 595 Grade A tubes. For structural steel shapes, plates and bars use A572 Gr 50 min or ASTM A709 Gr 50 min. Provide pole and arm shafts that are round in cross section or multisided tubular shapes and have a uniform linear taper of 0.14 in/ft. Construct shafts from one piece of single ply plate or coil so there are no circumferential weld splices. Galvanize in accordance with AASHTO M 111 or an approved equivalent.

Use the submerged arc process or other NCDOT previously approved process suitable for pole shaft and arms to continuously weld pole shafts and arm shafts along their entire length. The longitudinal seam weld will be finished flush to the outside contour of the base metal. Ensure shafts have no circumferential welds except at the lower end joining the shaft to the pole base and arm base. Use full penetration groove welds with backing ring for all tube-to-transverse-plate connections in accordance with 6th Edition AASHTO. Provide welding that conforms to Article 1072-18 of the *Standard Specifications*, except that no field welding on any part of the pole will be permitted unless approved by a qualified engineer.

Refer to Metal Pole Standard Drawing Sheets M2 through M5 for fabrication details. Fabricate anchor bases and mast arm connecting plates from plate steel meeting, as a minimum, the

requirements of ASTM A572 Gr 50, AASHTO M270 Gr 50, ASTM A709 Gr50, or an approved equivalent. Conform to the applicable bolt pattern and orientation as shown on Metal Pole Standard Drawing Sheet M2.

Ensure all hardware is galvanized steel or stainless steel. The Contractor is responsible for ensuring that the designer/fabricator specifies connecting hardware and/or materials that do not create a dissimilar metal corrosive reaction.

Provide a minimum of four (4) 1-1/2" diameter high strength bolts for connection between arm plate and pole plate. Increase number of bolts to six (6) 1-1/2" diameter high strength bolts when arm lengths are greater than 50'-0" long.

Unless otherwise required by the design, ensure each anchor rod is 2" diameter and 60" length. Provide 10" minimum thread projection at the top of the rod, and 8" minimum at the bottom of the rod. Use anchor rod assembly and drilled pier foundation materials that meet the *Foundations and Anchor Rod Assemblies for Metal Poles* provision.

For each structural bolt and other steel hardware, hot dip galvanizing shall conform to the requirements of AASHTO M 232 (ASTM A 153). Ensure end caps for poles or mast arms are constructed of cast aluminum conforming to Aluminum Alloy 356.0F.

Provide a circular anchor bolt lock plate that will be secured to the anchor bolts at the embedded end with 2 washers and 2 nuts. Provide a base plate template that matches the bolt circle diameter of the anchor bolt lock plate. Construct plates and templates from ½" minimum thick steel with a minimum width of 4". Galvanizing is not required for both plates.

Provide 4 heavy hex nuts and 4 flat washers for each anchor bolt. For nuts, use AASHTO M291 grade 2H, DH, or DH3 or equivalent material. For flat washers, use AASHTO M293 or equivalent material.

C. Construction Methods:

Erect signal support poles only after concrete has attained a minimum allowable compressive strength of 3000 psi. Install anchor rod assemblies in accordance with the *Foundations and Anchor Rod Assemblies for Metal Poles* provision.

For further construction methods, see construction methods for Metal Strain Pole, or Metal Pole with Mast Arm.

Connect poles to grounding electrodes and bond them to the electrical service grounding electrodes.

For holes in the poles used to accommodate cables, install grommets before wiring pole or arm. Do not cut or split grommets.

Attach the terminal compartment cover to the pole by a sturdy chain or cable. Ensure the chain or cable is long enough to permit the cover to hang clear of the compartment opening when the cover is removed, and is strong enough to prevent vandalism. Ensure the chain or cable will not interfere with service to the cables in the pole base.

Attach cap to pole with a sturdy chain or cable. Ensure the chain or cable is long enough to permit the cap to hang clear of the opening when the cap is removed.

Perform repair of damaged galvanizing that complies with the *Standard Specifications*, Article 1076-7 "Repair of Galvanizing."

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Install galvanized wire mesh around the perimeter of the base plate to cover the gap between the base plate and top of foundation for debris and pest control.

Install a 1/4" thick plate for concrete foundation tag to include: concrete grade, depth, diameter, and reinforcement sizes of the installed foundation.

5.2. METAL POLE UPRIGHTS (VERTICAL MEMBERS)

A. Materials:

- Provide tapered tubular shafts and fabricated of steel conforming to ASTM A-595 Grade A or an approved equivalent.
- Hot-dip galvanize poles in accordance with AASHTO M 111 or an approved equivalent.
- Have shafts that are continuously welded for the entire length by the submerged arc process, and with exposed welds ground or rolled smooth and flush with the base metal. Provide welding that conforms to Article 1072-18 of the *Standard Specification* except that no field welding on any part of the pole will be permitted.
- Have Shafts with no circumferential welds except at the lower end joining the shaft to the base.
- Have anchor bases for steel poles fabricated from plate steel meeting as a minimum the requirements of ASTM A572 Gr 50, AASHTO M270 Gr 50, ASTM A709 Gr 50, or an approved equivalent.

Provide a grounding lug(s) in the approximate vicinity of the messenger cable clamp for bonding and grounding messenger cable. Lugs must accept #4 or #6 AWG wire to bond messenger cables to the pole in order to provide an effective ground fault circuit path. Refer to Metal Pole Standard Drawing Sheet M6 for construction details.

Have poles permanently stamped above the hand holes with the identification tag details as shown on Metal Pole Standard Drawing Sheet M2.

Provide liquid tight flexible metal conduit (Type LFMC), liquid tight flexible nonmetallic conduit (Type LFNC), high density polyethylene conduit (Type HDPE), or approved equivalent to isolate conductors feeding luminaires.

Fabricate poles from a single piece of steel or aluminum with single line seam weld with no transverse butt welds. Fabrication of two ply pole shafts is unacceptable with the exception of fluted shafts. Provide tapers for all shafts that begin at base and that have diameters which decrease uniformly at the rate of not more than 0.14 inch per foot (11.7 millimeters per meter) of length.

Provide four anchor nuts and four washers for each anchor bolt. Ensure that anchor bolts have required diameters, lengths, and positions, and will develop strengths comparable to their respective poles.

Provide a terminal compartment with cover and screws in each pole that encompasses the hand hole and contains a 12-terminal barrier type terminal block. Provide two terminal screws with a removable shorting bar between them for each termination. Furnish terminal compartment covers attached to the pole by a sturdy chain or cable approved by the Engineer. Ensure that the chain or cable is long enough to permit the cover to hang clear of the compartment opening when the cover is removed, and is strong enough to prevent vandals from being able to disconnect the cover from the pole. Ensure that the chain or cable will not interfere with service to the cables in the pole base.

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Install grounding lugs that will accept #4 or #6 AWG wire to electrically bond messenger cables to the pole. Refer to Metal Pole Standard Drawing Sheet M6 for construction details.

For each pole, provide a 1/2 inch minimum thread diameter, coarse thread stud and nut for grounding which will accommodate #6 AWG ground wire. Ensure that the lug is electrically bonded to the pole and is conveniently located inside the pole at the hand hole.

Provide a removable pole cap with stainless steel attachment screws for the top of each pole. Ensure that the cap is cast aluminum conforming to Aluminum Association Alloy 356.0F. Furnish cap attached to the pole with a sturdy chain or cable approved by the Engineer. Ensure that the chain or cable is long enough to permit the cap to hang clear of the pole-top opening when the cap is removed.

When required by the plans, furnish couplings 42 inches above the bottom of the base for mounting of pedestrian pushbuttons. Provide mounting points consisting of 1-1/2 inch internally threaded half-couplings that comply with the NEC and that are mounted within the poles. Ensure that couplings are essentially flush with the outside surfaces of the poles and are installed before any required galvanizing. Provide a threaded plug in each mounting point. Ensure that the surface of the plug is essentially flush with the outer end of the mounting point when installed and has a recessed hole to accommodate a standard wrench.

1. STRAIN POLE SHAFTS

Provide 2 messenger cable (span wire) clamps and associated hardware for attachment of messenger cable. Ensure that diameter of the clamp is appropriate to its location on the pole and is appropriately designed to be adjustable from 1'-6" below the top, down to 6'-6" below the top of the pole. Do not attach more than one support cable to a messenger cable clamp.

Provide a minimum of three (3) 2 inch (50 mm) holes equipped with an associated coupling and weatherhead on the messenger cable load side of the pole to accommodate passage of signal cables from inside the pole. Provide galvanized threaded plugs for all unused couplings at pole entrance points. Refer to Metal Pole Standard Drawing Sheet M3 for fabrication details.

Ensure that allowable pole deflection does not exceed that allowed per 6th Edition AASHTO. Ensure maximum deflection at the top of the pole does not exceed 2.5 percent of the pole height.

2. MAST ARM POLE SHAFTS

Ensure that allowable pole deflection does not exceed that allowed per 6th Edition AASHTO. Ensure that maximum angular rotation of the top of the mast arm pole does not exceed 1 degree 40 minutes (1°40').

B. Construction Methods:

Install metal poles, hardware, and fittings as shown on the manufacturer's installation drawings. Install metal poles so that when the pole is fully loaded it is within 1 degree 40 minutes (1°40') of vertical. Install poles with the manufacturer's recommended "rake." Use threaded leveling nuts to establish rake if required.

5.3. DRILLED PIER FOUNDATIONS FOR METAL TRAFFIC SIGNAL POLES

Analysis procedures and formulas shall be based on AASHTO 6th Edition, latest ACI code and the *Drilled Shafts: Construction Procedures and Design Methods* FHWA-NHI-10-016 manual. Design methods based on engineering publications or research papers needs to have prior approval

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from NCDOT. The Department reserves the right to accept or disapprove any method used for the analysis.

Use a Factor of Safety of 1.33 for torsion and 2.0 for bending for the foundation design.

Foundation design for lateral load shall not exceed 1" lateral deflection at top of foundation.

For lateral analysis, use LPILE Plus V6.0 or later. Inputs, results and corresponding graphs are to be submitted with the design calculations.

Skin Friction is to be calculated using the α -method for cohesive soils and the β -method for cohesion-less soils (**Broms method will not be accepted**). Detailed descriptions of the " α " and " β " methods can be found in *FHWA-NHI-10-016*.

Omit first 2.5ft for cohesive soils when calculating skin friction.

When hammer efficiency is not provided, assume a value of 0.70.

Design all custom foundations to carry the maximum capacity of each metal pole. For standard case strain poles only, if a custom foundation is designed, use the actual shear, axial and moment reactions from the Standard Foundation Selection Table shown on Standard Drawing No. M8.

When poor soil conditions are encountered which could create an excessively large foundation design, consideration may be given to allowing an exemption to the maximum capacity design. The contractor must gain approval from the engineer before reducing a foundation's capacity. On projects where poor soil is known to be present, it is advisable that the contractor consider getting foundations approved before releasing poles for fabrication.

Have the contractor notify the engineer if the proposed foundation is to be installed on a slope other than 8H: 1V or flatter.

A. Description:

Furnish and install foundations for NCDOT metal poles with all necessary hardware in accordance with the plans and specifications.

Metal Pole Standards have been developed and implemented by NCDOT for use at signalized intersections in North Carolina. If the plans call for a standard pole, then a standard foundation may be selected from the plans. However, the Contractor is not required to use a standard foundation. If the Contractor chooses to design a non-standard site-specific foundation for a standard pole or if the plans call for a non-standard site-specific pole, design the foundation to conform to the applicable provisions in the NCDOT Metal Pole Standard Drawings and Section B7 (Non-Standard Foundation Design) below. If non-standard site specific foundations are designed for standard QPL approved strain poles, the foundation designer must use the design moment specified by load case on Metal Pole Standard Drawing Sheet M8. Failure to conform to this requirement will be grounds for rejection of the design.

If the Contractor chooses to design a non-standard foundation for a standard pole and the soil test results indicate a standard foundation is feasible for the site, the Contractor will be paid the cost of the standard foundation (drilled pier and wing wall, if applicable). Any additional costs associated with a non-standard site-specific foundation including additional materials, labor and equipment will be considered incidental to the cost of the standard foundation. All costs for the non-standard foundation design will also be considered incidental to the cost of the standard foundation.

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B. Soil Test and Foundation Determination:

1. General:

Drilled piers are reinforced concrete sections, cast-in-place against in situ, undisturbed material. Drilled piers are of straight shaft type and vertical.

Some standard drilled piers for supporting poles with mast arms may require wing walls to resist torsional rotation. Based upon this provision and the results of the required soil test, a drilled pier length and wing wall requirement may be determined and constructed in accordance with the plans.

For non-standard site-specific poles, the contractor-selected pole fabricator will determine if the addition of wing walls is necessary for the supporting foundations.

2. Soil Test:

Perform a soil test at each proposed metal pole location. Complete all required fill placement and excavation at each signal pole location to finished grade before drilling each boring. Soil tests performed that are not in compliance with this requirement may be rejected and will not be paid. Drill one boring to a depth of 26 feet within a 25 foot radius of each proposed foundation.

Perform standard penetration tests (SPT) in accordance with ASTM D 1586 at depths of 1, 2.5, 5, 7.5, 10, 15, 20 and 26 feet. Discontinue the boring if one of the following occurs:

- A total of 100 blows have been applied in any 2 consecutive 6-in. intervals.
- A total of 50 blows have been applied with < 3-in. penetration.

Describe each intersection as the "Intersection of (*Route or SR #*), (*Street Name*) and (*Route or SR #*), (*Street Name*), ______ County, Signal Inventory No. _____ ". Label borings with "B- <u>N, S, E, W, NE, NW, SE or SW</u>" corresponding to the quadrant location within the intersection. Pole numbers should be made available to the Drill Contractor. Include pole numbers in the boring label if they are available. If they are not available, ensure the boring labels can be cross-referenced to corresponding pole numbers. For each boring, submit a legible (hand written or typed) boring log signed and sealed by a licensed Geologist or Professional Engineer registered in North Carolina. Include on each boring the SPT blow counts and N-values at each depth, depth of the boring, hammer efficiency, depth of water table and a general description of the soil types encountered using the AASHTO Classification System.

3. Standard Foundation Determination:

Use the following method for determining the Design N-value:

$$N_{AVG} = (N@1' + N@2.5' + N@Deepest Boring Depth)$$

Total Number of N-values

$$Y = (N@1')^2 + (N@2.5')^2 + \dots (N@Deepest Boring Depth)^2$$

$$Z = (N@1' + N@2.5' + \dots N@Deepest Boring Depth)$$

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Note: If less than 4 N-values are obtained because of criteria listed in Section 2 above, use average of N-values collected for second condition. Do not include the N-value at the deepest boring depth for above calculations if the boring is discontinued at or before the required boring depth because of criteria listed in Section 2 above. Use N-value of zero for weight of hammer or weight of rod. If N-value is greater than 50, reduce N-value to 50 for calculations.

If standard NCDOT strain poles are shown on the plans and the Contractor chooses to use standard foundations, determine a drilled pier length, "L," for each signal pole from the Standard Foundations Chart (sheet M 8) based on the Design N-value and the predominant soil type. For each standard pole location, submit a completed "Metal Pole Standard Foundation Selection Form" signed by the Contractor's representative. Signature on form is for verification purposes only. Include the Design N-value calculation and resulting drilled pier length, "L," on each form.

If non-standard site-specific poles are shown on the plans, submit completed boring logs collected in accordance with Section 2 (Soil Test) above along with pole loading diagrams from the plans to the contractor-selected pole fabricator to assist in the pole and foundation design.

If one of the following occurs, the Standard Foundations Chart shown on the plans may not be used and a non-standard foundation may be required. In such case, contact the Engineer.

- The Design N-value is less than 4.
- The drilled pier length, "L", determined from the Standard Foundations Chart, is greater than the depth of the corresponding boring.

In the case where a standard foundation cannot be used, the Department will be responsible for the additional cost of the non-standard foundation.

Foundation designs are based on level ground around the traffic signal pole. If the slope around the edge of the drilled pier is steeper than 8:1 (H:V) or the proposed foundation will be less than 10 feet from the top of an embankment slope, the Contractor is responsible for providing slope information to the foundation designer and to the Engineer so it can be considered in the design.

The "Metal Pole Standard Foundation Selection Form" may be found at:

http://www.ncdot.gov/doh/preconstruct/highway/geotech/formdet/misc/MetalPole.pdf If assistance is needed, contact the Engineer.

4. Non-Standard Foundation Design:

Design non-standard foundations based upon site-specific soil test information collected in accordance with Section 2 (Soil Test) above. Design drilled piers for side resistance only in

accordance with Section 4.6 of the AASHTO Standard Specifications for Highway Bridges. Use the computer software LPILE version-6.0 or later manufactured by Ensoft, Inc. to analyze drilled piers. Use the computer software gINT V8i or later manufactured by Bentley Systems, Inc. with the current NCDOT gINT library and data template to produce SPT boring logs. Provide a drilled pier foundation for each pole with a length and diameter that result in a horizontal lateral movement of less than 1 inch at the top of the pier and a horizontal rotational movement of less than 1 inch at the edge of the pier. Contact the Engineer for pole loading diagrams for standard poles to be used for non-standard foundation designs. Submit any non-standard foundation designs including drawings, calculations, and soil boring logs to the Engineer for review and approval before construction.

C. Drilled Pier Construction:

Construct drilled pier foundations in accordance with the *Foundations and Anchor Rod Assemblies for Metal Poles* provision.

5.4. METAL SIGNAL POLE REMOVALS

A. Description:

Remove and dispose of existing metal signal poles including mast arms, and remove and dispose of existing foundations, associated anchor bolts, electrical wires and connections.

B. Construction Methods:

1. Foundations:

Remove and promptly dispose of the metal signal pole foundations including reinforcing steel, electrical wires, and anchor bolts to a minimum depth of two feet below the finished ground elevation. At the Contractor's option, remove the complete foundation.

2. Metal Poles:

Assume ownership of the metal signal poles, remove the metal signal poles, and promptly transport the metal signal poles from the project. Use methods to remove the metal signal poles and attached traffic signal equipment that will not result in damage to other portions of the project or facility. Repair damages that are a result of the Contractor's actions at no additional cost to the Department.

Transport and properly dispose of the materials.

Backfill and compact disturbed areas to match the finished ground elevation. Seed unpaved areas.

Use methods to remove the foundations that will not result in damage to other portions of the project or facility. Repair damages that are a result of the Contractor's actions at no cost to the Department.

5.5. POLE NUMBERING SYSTEM

A. New Poles

Attach an identification tag to each pole shaft and mast arm section as shown on Metal Pole Standard Drawing Sheet M2 "Typical Fabrication Details Common To All Metal Poles".

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B. Reused Poles

Do not remove the original identification tag(s) from the pole shaft and/or mast arm sections. Add a new identification tag based on the new location for any reused poles and/or mast arms.

5.6. REUSED POLE SHAFTS AND/OR MAST ARMS

Provide shop drawings along with new foundation designs for review and approval prior to furnishing and/or installing any reused metal poles and/or mast arms. Use the same requirements as specified for new materials as stated above in these Special Provisions.

For reused pole shaft and mast arm combinations, it is preferable to use the original shafts and arms that were used together at the time of original installation.

5.7. MEASUREMENT AND PAYMENT

Actual number of metal strain signal poles (without regard to height or load capacity) furnished, installed and accepted.

Actual number of soil tests with SPT borings drilled furnished and accepted.

Actual volume of concrete poured in cubic yards of drilled pier foundation furnished, installed and accepted.

Actual number of metal signal pole foundations removed and disposed.

Actual number of metal signal poles removed and disposed.

Payment will be made under:

| Metal Strain Signal Pole | Each |
|-------------------------------|------|
| Soil Test | |
| Drilled Pier Foundation | |
| Metal Pole Foundation Removal | Each |
| Metal Pole Removal | |

6. CONTROLLERS WITH CABINETS

6.1. MATERIALS – TYPE 2070L CONTROLLERS

Conform to CALTRANS *Transportation Electrical Equipment Specifications* (TEES) (dated August 16, 2002, plus Errata 1 dated October 27, 2003 and Errata 2 dated June 08, 2004) except as required herein.

Furnish Model 2070L controllers. Ensure that removal of the CPU module from the controller will place the intersection into flash.

The Department will provide software at the beginning of the burning-in period. Contractor shall give 5 working days notice before needing software. Program software provided by the Department.

Provide model 2070L controllers with the latest version of OS9 operating software and device drivers, composed of the unit chassis and at a minimum the following modules and assemblies:

- MODEL 2070 1B, CPU Module, Single Board
- MODEL 2070-2A, Field I/O Module (FI/O)

- Note: Configure the Field I/O Module to disable both the External WDT Shunt/Toggle Switch and SP3 (SP3 active indicator is "off")
- MODEL 2070-3B, Front Panel Module (FP), Display B (8x40)
- MODEL 2070-4A, Power Supply Module, 10 AMP
- MODEL 2070-7A, Async Serial Com Module (9-pin RS-232)

Furnish one additional MODEL 2070-7A, Async Serial Com Module (9-pin RS-232) for all master controller locations.

For each master location and central control center, furnish a U.S. Robotics V.92 or approved equivalent auto-dial/auto-answer external modem to accomplish the interface to the Department-furnished microcomputers. Include all necessary hardware to ensure telecommunications.

6.2.MATERIALS – GENERAL CABINETS

Provide a moisture resistant coating on all circuit boards.

Provide one 20 mm diameter radial lead UL-recognized metal oxide varistor (MOV) between each load switch field terminal and equipment ground. Electrical performance is outlined below.

| PROPERTIES OF MOV SURGE PROTECTOR | | | | | | |
|---|---------------|--|--|--|--|--|
| Maximum Continuous Applied Voltage at | 150 VAC (RMS) | | | | | |
| 185° F | 200 VDC | | | | | |
| Maximum Peak 8x20µs Current at 185° F | 6500 A | | | | | |
| Maximum Energy Rating at 185° F | 80 J | | | | | |
| Voltage Range 1 mA DC Test at 77° F | 212-268 V | | | | | |
| Max. Clamping Voltage 8x20µs, 100A at 77° F | 395 V | | | | | |
| Typical Capacitance (1 MHz) at 77° F | 1600 pF | | | | | |

Provide a power line surge protector that is a two-stage device that will allow connection of the radio frequency interference filter between the stages of the device. Ensure that a maximum continuous current is at least 10A at 120V. Ensure that the device can withstand a minimum of 20 peak surge current occurrences at 20,000A for an 8x20 microsecond waveform. Provide a maximum clamp voltage of 395V at 20,000A with a nominal series inductance of 200µh. Ensure that the voltage does not exceed 395V. Provide devices that comply with the following:

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| Frequency (Hz) | Minimum Insertion Loss (dB) |
|----------------|--------------------------------|
| 60 | 0 |
| 10,000 | 30 |
| 50,000 | 55 |
| 100,000 | 50 |
| 500,000 | 50 |
| 2,000,000 | 60 |
| 5,000,000 | 40 |
| 10,000,000 | 20 |
| 20,000,000 | 25 |

6.3. MATERIALS – TYPE 170E CABINETS

A. Type 170 E Cabinets General:

Conform to the city of Los Angeles' Specification No. 54-053-08, *Traffic Signal Cabinet Assembly Specification* (dated July 2008), except as required herein.

Furnish model 336S pole mounted cabinets configured for 8 vehicle phases, 4 pedestrian phases, and 6 overlaps. Do not reassign load switches to accommodate overlaps unless shown on electrical details. Provide 336S pole mounted cabinets that are 46" high with 40" high internal rack assemblies.

Furnish model 332 base mounted cabinets configured for 8 vehicle phases, 4 pedestrian phases, and 6 overlaps. When overlaps are required, provide auxiliary output files for the overlaps. Do not reassign load switches to accommodate overlaps unless shown on electrical details.

Provide model 200 load switches, model 222 loop detector sensors, model 252 AC isolators, and model 242 DC isolators according to the electrical details. As a minimum, provide one (1) model 2018 conflict monitor, one (1) model 206L power supply unit, two (2) model 204 flashers, one (1) DC isolator (located in slot I14), and four (4) model 430 flash transfer relays (provide seven (7) model 430 flash transfer relays if auxiliary output file is installed) with each cabinet.

B. Type 170 E Cabinet Electrical Requirements:

Provide a cabinet assembly designed to ensure that upon leaving any cabinet switch or conflict monitor initiated flashing operation, the controller starts up in the programmed start up phases and start up interval.

Furnish two sets of non-fading cabinet wiring diagrams and schematics in a paper envelope or container and placed in the cabinet drawer.

All AC+ power is subject to radio frequency signal suppression.

Provide surge suppression in the cabinet for each type of cabinet device. Provide surge protection for the full capacity of the cabinet input file. Provide surge suppression devices that

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operate properly over a temperature range of -40° F to $+185^{\circ}$ F. Ensure the surge suppression devices provide both common and differential modes of protection.

Provide a pluggable power line surge protector that is installed on the back of the PDA (power distribution assembly) chassis to filter and absorb power line noise and switching transients. Ensure the device incorporates LEDs for failure indication and provides a dry relay contact closure for the purpose of remote sensing. Ensure the device meets the following specifications:

| Peak Surge Current (Single pulse, 8x20μs) | 20,000A |
|---|----------------------|
| Occurrences (8x20µs waveform) | 10 minimum @ 20,000A |
| Maximum Clamp Voltage | 395VAC |
| Operating Current. | 15 amps |
| Response Time. | < 5 nanoseconds |

Provide a loop surge suppressor for each set of loop terminals in the cabinet. Ensure the device meets the following specifications:

| Peak Surge Current (6 times, 8x20µs) | |
|--------------------------------------|-----------------|
| (Differential Mode) | 400A |
| (Common Mode) | 1,000A |
| Occurrences (8x20µs waveform) | 500 min @ 200A |
| Maximum Clamp Voltage | |
| (Differential Mode @400A) | 35V |
| (Common Mode @1,000A) | 35V |
| Response Time | < 5 nanoseconds |
| Maximum Capacitance | 35 pF |

Provide a data communications surge suppressor for each communications line entering or leaving the cabinet. Ensure the device meets the following specifications:

| Peak Surge Current (Single pulse, 8x20µs) | 10,000A |
|---|-------------------------------|
| Occurrences (8x20µs waveform) | 100 min @ 2,000A |
| Maximum Clamp Voltage | Rated for equipment protected |
| Response Time | < 1 nanosecond |
| Maximum Capacitance | 1,500 pF |
| Maximum Series Resistance | 15Ω |

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Provide a DC signal surge suppressor for each DC input channel in the cabinet. Ensure the device meets the following specifications:

| Peak Surge Current (Single pulse, 8x20µs) | 10,000A |
|---|----------------|
| Occurrences (8x20µs waveform) | 100 @ 2,000A |
| Maximum Clamp Voltage | 30V |
| Response Time. | < 1 nanosecond |

Provide a 120 VAC signal surge suppressor for each AC+ interconnect signal input. Ensure the device meets the following specifications:

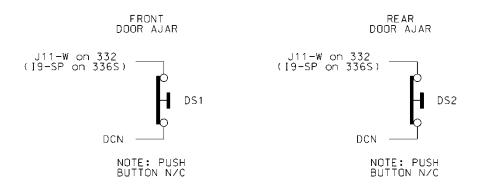
| Peak Surge Current (Single pulse, 8x20μs) | 20,000A |
|---|---------------------|
| Maximum Clamp Voltage | 350VAC |
| Response Time. | < 200 nanoseconds |
| Discharge Voltage | <200 Volts @ 1,000A |
| Insulation Resistance | ≥100 MΩ |

Provide conductors for surge protection wiring that are of sufficient size (ampacity) to withstand maximum overcurrents which could occur before protective device thresholds are attained and current flow is interrupted.

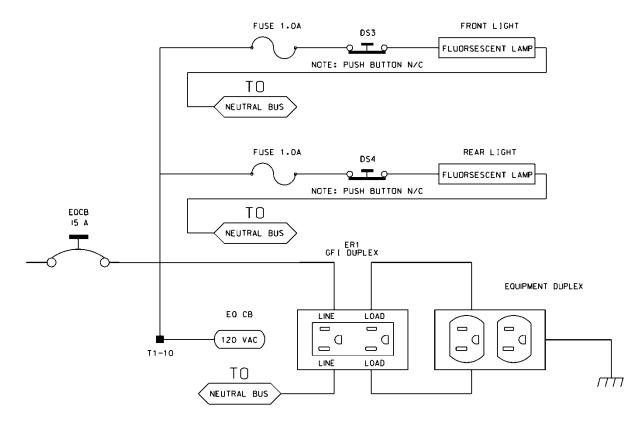
If additional surge protected power outlets are needed to accommodate fiber transceivers, modems, etc., install a UL listed, industrial, heavy-duty type power outlet strip with a minimum rating of 15 A / 125 VAC, 60 Hz. Provide a strip that has a minimum of 3 grounded outlets. Ensure the power outlet strip plugs into one of the controller unit receptacles located on the rear of the PDA. Ensure power outlet strip is mounted securely; provide strain relief if necessary.

Provide a door switch in the front and a door switch in the rear of the cabinet that will provide the controller unit with a Door Ajar alarm when either the front or the rear door is open. Ensure the door switches apply DC ground to the Input File when either the front door or the rear door is open.

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Furnish a fluorescent fixture in the rear across the top of the cabinet and another fluorescent fixture in the front across the top of the cabinet at a minimum. Ensure that the fixtures provide sufficient light to illuminate all terminals, labels, switches, and devices in the cabinet. Conveniently locate the fixtures so as not to interfere with a technician's ability to perform work on any devices or terminals in the cabinet. Provide a protective diffuser to cover exposed bulbs. Install 16 watt T-4 lamps in the fluorescent fixtures. Provide a door switch to provide power to each fixture when the respective door is open. Wire the fluorescent fixtures to the 15 amp ECB (equipment circuit breaker).



Furnish a police panel with a police panel door. For model 336S cabinets, mount the police panel on the rear door. Ensure that the police panel door permits access to the police panel when the main door is closed. Ensure that no rainwater can enter the cabinet even with the police panel door open. Provide a police panel door hinged on the right side as viewed from the front. Provide a police panel

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door lock that is keyed to a standard police/fire call box key. In addition to the requirements of LA Specification No. 54-053-08, provide the police panel with a toggle switch connected to switch the intersection operation between normal stop-and-go operation (AUTO) and manual operation (MANUAL). Ensure that manual control can be implemented using inputs and software such that the controller provides full programmed clearance times for the yellow clearance and red clearance for each phase while under manual control.

Provide a 1/4-inch locking phone jack in the police panel for a hand control to manually control the intersection. Provide sufficient room in the police panel for storage of a hand control and cord.

Ensure the 336S cabinet Input File is wired as follows:

| 336S Cabinet | | | | | | | | | | | | | | |
|-----------------|-----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Port-Bit/C-1 Pin Assignment | | | | | | | | | | | | | |
| Slot # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| C-1 (Spares) | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 75 | 76 | 77 | 78 | 79 | 80 |
| Port | 3-2 | 1-1 | 3-4 | 1-3 | 3-1 | 1-2 | 3-3 | 1-4 | 2-5 | 5-5 | 5-6 | 5-1 | 5-2 | 6-7 |
| C-1 | 56 | 39 | 58 | 41 | 55 | 40 | 57 | 42 | 51 | 71 | 72 | 67 | 68 | 81 |
| Port | 2-1 | 1-5 | 2-3 | 1-7 | 2-2 | 1-6 | 2-4 | 1-8 | 2-6 | 5-7 | 5-8 | 5-3 | 5-4 | 6-8 |
| C-1 | 47 | 43 | 49 | 45 | 48 | 44 | 50 | 46 | 52 | 73 | 74 | 69 | 70 | 82 |

For model 332 base mounted cabinets, ensure terminals J14-E and J14-K are wired together on the rear of the Input File. Connect TB9-12 (J14 Common) on the Input Panel to T1-2 (AC-) on the rear of the PDA.

Provide detector test switches mounted at the top of the cabinet rack or other convenient location which may be used to place a call on each of eight phases based on the chart below. Provide three positions for each switch: On (place call), Off (normal detector operation), and Momentary On (place momentary call and return to normal detector operation after switch is released). Ensure that the switches are located such that the technician can read the controller display and observe the intersection.

Connect detector test switches for cabinets as follows:

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| 336S Cabinet | t | 332 Cabinet | |
|-------------------------------|-----------|-------------------------------|-----------|
| Detector Call Switches | Terminals | Detector Call Switches | Terminals |
| Phase 1 | I1-F | Phase 1 | I1-W |
| Phase 2 | I2-F | Phase 2 | I4-W |
| Phase 3 | I3-F | Phase 3 | I5-W |
| Phase 4 | I4-F | Phase 4 | I8-W |
| Phase 5 | I5-F | Phase 5 | J1-W |
| Phase 6 | I6-F | Phase 6 | J4-W |
| Phase 7 | I7-F | Phase 7 | J5-W |
| Phase 8 | I8-F | Phase 8 | J8-W |

Provide the PCB 28/56 connector for the conflict monitor unit (CMU) with 28 independent contacts per side, dual-sided with 0.156 inch contact centers. Provide the PCB 28/56 connector contacts with solder eyelet terminations. Ensure all connections to the PCB 28/56 connector are soldered to the solder eyelet terminations.

Ensure that all cabinets have the CMU connector wired according to the 332 cabinet connector pin assignments (include all wires for auxiliary output file connection). Wire pins 13, 16, R, and U of the CMU connector to a separate 4 pin plug, P1, as shown below. Provide a second plug, P2, which will mate with P1 and is wired to the auxiliary output file as shown below. Provide an additional plug, P3, which will mate with P1 and is wired to the pedestrian yellow circuits as shown below. When no auxiliary output file is installed in the cabinet, provide wires for the green and yellow inputs for channels 11, 12, 17, and 18, the red inputs for channels 17 and 18, and the wires for the P2 plug. Terminate the two-foot wires with ring type lugs, insulated, and bundled for optional use.

| | P | 1 | P | 2 | Р3 | | |
|-----|----------|---------|----------|---------|----------|---------|--|
| PIN | FUNCTION | CONN TO | FUNCTION | CONN TO | FUNCTION | CONN TO | |
| 1 | CH-9G | CMU-13 | OLA-GRN | A123 | 2P-YEL | 114 | |
| 2 | CH-9Y | CMU-16 | OLA-YEL | A122 | 4P-YEL | 105 | |
| 3 | CH-10G | CMU-R | OLB-GRN | A126 | 6P-YEL | 120 | |
| 4 | CH-10Y | CMU-U | OLB-YEL | A125 | 8P-YEL | 111 | |

Do not provide the P20 terminal assembly (red monitor board) or red interface ribbon cable as specified in LA Specification No. 54-053-08.

Provide a P20 connector that mates with and is compatible with the red interface connector mounted on the front of the conflict monitor. Ensure that the P20 connector and the red interface

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connector on the conflict monitor are center polarized to ensure proper connection. Ensure that removal of the P20 connector will cause the conflict monitor to recognize a latching fault condition and place the cabinet into flashing operation.

Wire the P20 connector to the output file and auxiliary output file using 22 AWG stranded wires. Ensure the length of these wires is a minimum of 42 inches in length. Provide a durable braided sleeve around the wires to organize and protect the wires.

Wire the P20 connector to the traffic signal red displays to provide inputs to the conflict monitor as shown below. Ensure the pedestrian Don't Walk circuits are wired to channels 13 through 16 of the P20 connector. When no auxiliary output file is installed in the cabinet, provide wires for channels 9 through 12 reds. Provide a wire for special function 1. Terminate the unused wires with ring type lugs, insulated, and bundled for optional use.

| | P20 Connector | | | | | | | | |
|-----|----------------|---------|-----|-----------------|---------|--|--|--|--|
| PIN | FUNCTION | CONN TO | PIN | FUNCTION | CONN TO | | | | |
| 1 | Channel 15 Red | 119 | 2 | Channel 16 Red | 110 | | | | |
| 3 | Channel 14 Red | 104 | 4 | Chassis GND | 01-9 | | | | |
| 5 | Channel 13 Red | 113 | 6 | N/C | | | | | |
| 7 | Channel 12 Red | AUX 101 | 8 | Spec Function 1 | | | | | |
| 9 | Channel 10 Red | AUX 124 | 10 | Channel 11 Red | AUX 114 | | | | |
| 11 | Channel 9 Red | AUX 121 | 12 | Channel 8 Red | 107 | | | | |
| 13 | Channel 7 Red | 122 | 14 | Channel 6 Red | 134 | | | | |
| 15 | Channel 5 Red | 131 | 16 | Channel 4 Red | 101 | | | | |
| 17 | Channel 3 Red | 116 | 18 | Channel 2 Red | 128 | | | | |
| 19 | Channel 1 Red | 125 | 20 | Red Enable | 01-14 | | | | |

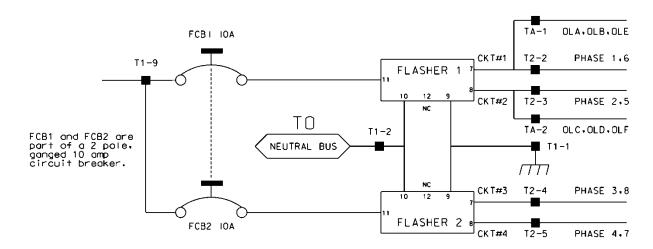
Ensure the controller unit outputs to the auxiliary output file are pre-wired to the C5 connector. When no auxiliary output file is installed in the cabinet, connect the C5 connector to a storage socket located on the Input Panel or on the rear of the PDA.

Do not wire pin 12 of the load switch sockets.

In addition to the requirements of LA Specification No. 54-053-08, ensure relay K1 on the Power Distribution Assembly (PDA) is a four pole relay and K2 on the PDA is a two pole relay.

Provide a two pole, ganged circuit breaker for the flash bus circuit. Ensure the flash bus circuit breaker is an inverse time circuit breaker rated for 10 amps at 120 VAC with a minimum of 10,000 RMS symmetrical amperes short circuit current rating. Do not provide the auxiliary switch feature on the flash bus circuit breaker. Ensure the ganged flash bus circuit breaker is certified by the circuit breaker manufacturer to provide gang tripping operation.

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Ensure auxiliary output files are wired as follows:

| AUXILIARY OUTPUT FILE TERMINAL BLOCK TA ASSIGNMENTS | | |
|---|---|--|
| POSITION | FUNCTION | |
| 1 | Flasher Unit #1, Circuit 1/FTR1 (OLA, OLB)/FTR3 (OLE) | |
| 2 | Flasher Unit #1, Circuit 2/FTR2 (OLC, OLD)/FTR3 (OLF) | |
| 3 | Flash Transfer Relay Coils | |
| 4 | AC - | |
| 5 | Power Circuit 5 | |
| 6 | Power Circuit 5 | |
| 7 | Equipment Ground Bus | |
| 8 | NC | |

Provide four spare load resistors mounted in each cabinet. Ensure each load resistor is rated as shown in the table below. Wire one side of each load resistor to AC-. Connect the other side of each resistor to a separate terminal on a four (4) position terminal block. Mount the load resistors and terminal block either inside the back of Output File No. 1 or on the upper area of the Service Panel.

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| ACCEPTABLE LOAD RESISTOR VALUES | | |
|------------------------------------|-----------|--|
| VALUE (ohms) | WATTAGE | |
| 1.5K – 1.9 K | 25W (min) | |
| 2.0K – 3.0K | 10W (min) | |

Provide Model 200 load switches, Model 204 flashers, Model 242 DC isolators, Model 252 AC isolators, and Model 206L power supply units that conform to CALTRANS' "*Transportation Electrical Equipment Specifications*" dated March 12, 2009 with Erratum 1.

C. Type 170 E Cabinet Physical Requirements:

Do not mold, cast, or scribe the name "City of Los Angeles" on the outside of the cabinet door as specified in LA Specification No. 54-053-08. Do not provide a Communications Terminal Panel as specified in LA Specification No. 54-053-08. Do not provide terminal block TBB on the Service Panel. Do not provide Cabinet Verification Test Program software or associated test jigs as specified in LA Specification No. 54-053-08.

Furnish unpainted, natural, aluminum cabinet shells. Ensure that all non-aluminum hardware on the cabinet is stainless steel or a Department approved non-corrosive alternate.

Ensure the lifting eyes, gasket channels, police panel, and all supports welded to the enclosure and doors are fabricated from 0.125 inch minimum thickness aluminum sheet and meet the same standards as the cabinet and doors.

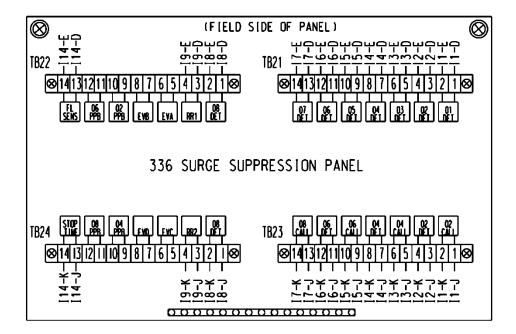
Provide front and rear doors with latching handles that allow padlocking in the closed position. Furnish 0.75 inch minimum diameter stainless steel handles with a minimum 0.5 inch shank. Place the padlocking attachment at 4.0 inches from the handle shank center to clear the lock and key. Provide an additional 4.0 inches minimum gripping length.

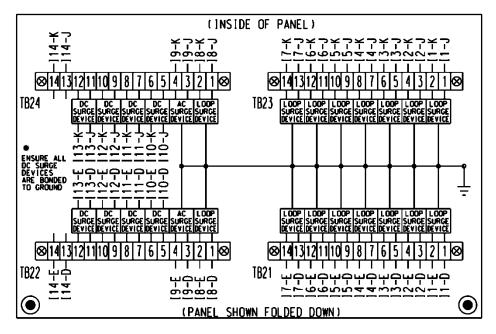
Provide Corbin #2 locks on the front and rear doors. Provide one (1) Corbin #2 and one (1) police master key with each cabinet. Ensure main door locks allow removal of keys in the locked position only.

Provide a surge protection panel with 16 loop surge protection devices and designed to allow sufficient free space for wire connection/disconnection and surge protection device replacement. For model 332 cabinets, provide an additional 20 loop surge protection devices. Provide an additional two AC+ interconnect surge devices to protect one slot and eight DC surge protection devices to protect four slots. Provide no protection devices on slot I14.

For pole mounted cabinets, mount surge protection devices for the AC+ interconnect inputs, inductive loop detector inputs, and low voltage DC inputs on a swing down panel assembly fabricated from sturdy aluminum. Attach the swing down panel to the bottom rear cabinet rack assembly using thumb screws. Ensure the swing down panel allows for easy removal of the input file without removing the surge protection panel assembly or its parts. Have the surge protection devices mounted horizontally on the panel and soldered to the feed through terminals of four 14 position terminal blocks with #8 screws mounted on the other side. Ensure the top row of terminals is connected to the upper slots and the bottom row of terminals is connected to the bottom slots. Provide a 15 position copper equipment ground bus attached to the field terminal side (outside) of

the swing down panel for termination of loop lead-in shield grounds. Ensure that a Number 4 AWG green wire connects the surge protection panel assembly ground bus to the main cabinet equipment ground.





For base mounted cabinets, mount surge protection panels on the left side of the cabinet as viewed from the rear. Attach each panel to the cabinet rack assembly using bolts and make it easily removable. Mount the surge protection devices in vertical rows on each panel and connect the

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devices to one side of 12 position, double row terminal blocks with #8 screws. For each surge protection panel, terminate all grounds from the surge protection devices on a copper equipment ground bus attached to the surge protection panel. Wire the terminals to the rear of a standard input file using spade lugs for input file protection.

Provide permanent labels that indicate the slot and the pins connected to each terminal that may be viewed from the rear cabinet door. Label and orient terminals so that each pair of inputs is next to each other. Indicate on the labeling the input file (I or J), the slot number (1-14) and the terminal pins of the input slots (either D & E for upper or J & K for lower).

Provide a minimum 14 x 16 inch pull out, hinged top shelf located immediately below controller mounting section of the cabinet. Ensure the shelf is designed to fully expose the table surface outside the controller at a height approximately even with the bottom of the controller. Ensure the shelf has a storage bin interior which is a minimum of 1 inch deep and approximately the same dimensions as the shelf. Provide an access to the storage area by lifting the hinged top of the shelf. Fabricate the shelf and slide from aluminum or stainless steel and ensure the assembly can support the 2070L controller plus 15 pounds of additional weight. Ensure shelf has a locking mechanism to secure it in the fully extended position and does not inhibit the removal of the 2070L controller or removal of cards inside the controller when fully extended. Provide a locking mechanism that is easily released when the shelf is to be returned to its non-use position directly under the controller.

D. Model 2018 Enhanced Conflict Monitor:

Furnish Model 2018 Enhanced Conflict Monitors that provide monitoring of 18 channels. Ensure each channel consists of a green, yellow, and red field signal input. Ensure that the conflict monitor meets or exceeds CALTRANS' Transportation Electrical Equipment Specifications dated March 12, 2009, with Erratum 1 (hereafter referred to as CALTRANS' 2009 TEES) for a model 210 monitor unit and other requirements stated in this specification.

Ensure the conflict monitor is provided with an 18 channel conflict programming card. Pin EE and Pin T of the conflict programming card shall be connected together. Pin 16 of the conflict programming card shall be floating. Ensure that the absence of the conflict programming card will cause the conflict monitor to trigger (enter into fault mode), and remain in the triggered state until the programming card is properly inserted and the conflict monitor is reset.

Provide a conflict monitor that incorporates LED indicators into the front panel to dynamically display the status of the monitor under normal conditions and to provide a comprehensive review of field inputs with monitor status under fault conditions. Ensure that the monitor indicates the channels that were active during a conflict condition and the channels that experienced a failure for all other per channel fault conditions detected. Ensure that these indications and the status of each channel are retained until the Conflict Monitor is reset. Furnish LED indicators for the following:

- AC Power (Green LED indicator)
- VDC Failed (Red LED indicator)
- WDT Error (Red LED indicator)
- Conflict (Red LED indicator)
- Red Fail (Red LED indicator)
- Dual Indication (Red LED indicator)

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- Yellow/Clearance Failure (Red LED indicator)
- PCA/PC Ajar (Red LED indicator)
- Monitor Fail/Diagnostic Failure (Red LED indicator)
- 54 Channel Status Indicators (1 Red, 1 Yellow, and 1 Green LED indicator for each of the 18 channels)

Provide a switch to set the Red Fail fault timing. Ensure that when the switch is in the ON position the Red Fail fault timing value is set to 1350 +/- 150 ms (2018 mode). Ensure that when the switch is in the OFF position the Red Fail fault timing value is set to 850 +/- 150 ms (210 mode).

Provide a switch to set the Watchdog fault timing. Ensure that when the switch is in the ON position the Watchdog fault timing value is set to 1.0 + /- 0.1 s (2018 mode). Ensure that when the switch is in the OFF position the Watchdog fault timing value is set to 1.5 + /- 0.1 s (210 mode).

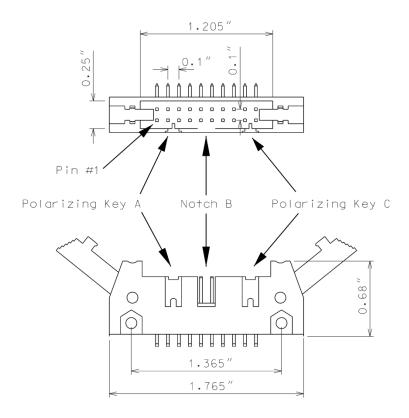
Provide a jumper or switch to set the AC line brown-out levels. Ensure that when the jumper is present or the switch is in the ON position the AC line dropout voltage threshold is $98 \pm 2 \text{ Vrms}$, the AC line restore voltage threshold is $103 \pm 2 \text{ Vrms}$, and the AC line brown-out timing value is set to $400 \pm 50 \text{ ms}$ (2018 mode). Ensure that when the jumper is not present or the switch is in the OFF position the AC line dropout voltage threshold is $92 \pm 2 \text{ Vrms}$, the AC line restore voltage threshold is $98 \pm 2 \text{ Vrms}$, and the AC line brown-out timing value is set to $80 \pm 10 \text{ Vrms}$, and the AC line brown-out timing value is set to $80 \pm 10 \text{ Vrms}$.

Provide a jumper or switch that will enable and disable the Watchdog Latch function. Ensure that when the jumper is not present or the switch is in the OFF position the Watchdog Latch function is disabled. In this mode of operation, a Watchdog fault will be reset following a power loss, brownout, or power interruption. Ensure that when the jumper is present or the switch is in the ON position the Watchdog Latch function is enabled. In this mode of operation, a Watchdog fault will be retained until a Reset command is issued.

Provide a jumper that will reverse the active polarity for pin #EE (output relay common). Ensure that when the jumper is not present pin #EE (output relay common) will be considered 'Active' at a voltage greater than 70 Vrms and 'Not Active' at a voltage less than 50 Vrms (Caltrans mode). Ensure that when the jumper is present pin #EE (output relay common) will be considered 'Active' at a voltage less than 50 Vrms and 'Not Active' at a voltage greater than 70 Vrms (Failsafe mode).

In addition to the connectors required by CALTRANS' 2009 TEES, provide the conflict monitor with a red interface connector mounted on the front of the monitor. Ensure the connector is a 20 pin, right angle, center polarized, male connector with latching clip locks and polarizing keys. Ensure the right angle solder tails are designed for a 0.062" thick printed circuit board. Keying of the connector shall be between pins 3 and 5, and between 17 and 19. Ensure the connector has two rows of pins with the odd numbered pins on one row and the even pins on the other row. Ensure the connector pin row spacing is 0.10" and pitch is 0.10". Ensure the mating length of the connector pins is 0.24". Ensure the pins are finished with gold plating 30µ" thick.

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Ensure the red interface connector pins on the monitor have the following functions:

| Pin # | Function | Pin # | Function |
|-------|----------------|-------|--------------------|
| 1 | Channel 15 Red | 2 | Channel 16 Red |
| 3 | Channel 14 Red | 4 | Chassis Ground |
| 5 | Channel 13 Red | 6 | Special Function 2 |
| 7 | Channel 12 Red | 8 | Special Function 1 |
| 9 | Channel 10 Red | 10 | Channel 11 Red |
| 11 | Channel 9 Red | 12 | Channel 8 Red |
| 13 | Channel 7 Red | 14 | Channel 6 Red |
| 15 | Channel 5 Red | 16 | Channel 4 Red |
| 17 | Channel 3 Red | 18 | Channel 2 Red |
| 19 | Channel 1 Red | 20 | Red Enable |

Ensure that removal of the P20 cable connector will cause the conflict monitor to recognize a latching fault condition and place the cabinet into flashing operation.

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Provide Special Function 1 and Special Function 2 inputs to the unit which shall disable only Red Fail Monitoring when either input is sensed active. A Special Function input shall be sensed active when the input voltage exceeds 70 Vrms with a minimum duration of 550 ms. A Special Function input shall be sensed not active when the input voltage is less than 50 Vrms or the duration is less than 250 ms. A Special Function input is undefined by these specifications and may or may not be sensed active when the input voltage is between 50 Vrms and 70 Vrms or the duration is between 250 ms and 550 ms.

Ensure the conflict monitor recognizes field signal inputs for each channel that meet the following requirements:

- consider a Red input greater than 70 Vrms and with a duration of at least 500 ms as an "on" condition;
- consider a Red input less than 50 Vrms or with a duration of less than 200 ms as an "off" condition (no valid signal);
- consider a Red input between 50 Vrms and 70 Vrms or with a duration between 200 ms and 500 ms to be undefined by these specifications;
- consider a Green or Yellow input greater than 25 Vrms and with a duration of at least 500 ms as an "on" condition;
- consider a Green or Yellow input less than 15 Vrms or with a duration of less than 200 ms as an "off" condition; and
- consider a Green or Yellow input between 15 Vrms and 25 Vrms or with a duration between 200 ms and 500 ms to be undefined by these specifications.

Provide a conflict monitor that recognizes the faults specified by CALTRANS' 2009 TEES and the following additional faults. Ensure the conflict monitor will trigger upon detection of a fault and will remain in the triggered (in fault mode) state until the unit is reset at the front panel or through the external remote reset input for the following failures:

- 1. **Red Monitoring or Absence of Any Indication (Red Failure):** A condition in which no "on" voltage signal is detected on any of the green, yellow, or red inputs to a given monitor channel. If a signal is not detected on at least one input (R, Y, or G) of a conflict monitor channel for a period greater than 1000 ms when used with a 170 controller and 1500 ms when used with a 2070 controller, ensure monitor will trigger and put the intersection into flash. If the absence of any indication condition lasts less than 700 ms when used with a 170 controller and 1200 ms when used with a 2070 controller, ensure conflict monitor will not trigger. Red fail monitoring shall be enabled on a per channel basis by the use of switches located on the conflict monitor. Have red monitoring occur when all of the following input conditions are in effect:
 - a) Red Enable input to monitor is active (Red Enable voltages are "on" at greater than 70 Vrms, off at less than 50 Vrms, undefined between 50 and 70 Vrms), and
 - b) Neither Special Function 1 nor Special Function 2 inputs are active.

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- c) Pin #EE (output relay common) is not active
- 2. **Short/Missing Yellow Indication Fault (Clearance Error):** Yellow indication following a green is missing or shorter than 2.7 seconds (with ± 0.1-second accuracy). If a channel fails to detect an "on" signal at the Yellow input for a minimum of 2.7 seconds (± 0.1 second) following the detection of an "on" signal at a Green input for that channel, ensure that the monitor triggers and generates a clearance/short yellow error fault indication. Short/missing yellow (clearance) monitoring shall be enabled on a per channel basis by the use of switches located on the conflict monitor. This fault shall not occur when the channel is programmed for Yellow Inhibit, when the Red Enable signal is inactive or pin #EE (output relay common) is active.
- 3. **Dual Indications on the Same Channel:** In this condition, more than one indication (R,Y,G) is detected as "on" at the same time on the same channel. If dual indications are detected for a period greater than 500 ms, ensure that the conflict monitor triggers and displays the proper failure indication (Dual Ind fault). If this condition is detected for less than 200 ms, ensure that the monitor does not trigger. G-Y-R dual indication monitoring shall be enabled on a per channel basis by the use of switches located on the conflict monitor. G-Y dual indication monitoring shall be enabled for all channels by use of a switch located on the conflict monitor. This fault shall not occur when the Red Enable signal is inactive or pin #EE (output relay common) is active.
- 4. Configuration Settings Change: The configuration settings are comprised of (as a minimum) the permissive diode matrix, dual indication switches, yellow disable jumpers, any option switches, any option jumpers, and the Watchdog Enable switch. Ensure the conflict monitor compares the current configuration settings with the previous stored configuration settings on power-up, on reset, and periodically during operation. If any of the configuration settings are changed, ensure that the conflict monitor triggers and causes the program card indicator to flash. Ensure that configuration change faults are only reset by depressing and holding the front panel reset button for a minimum of three seconds. Ensure the external remote reset input does not reset configuration change faults.

Ensure the conflict monitor will trigger and the AC Power indicator will flash at a rate of $2~Hz~\pm~20\%$ with a 50% duty cycle when the AC Line voltage falls below the "drop-out" level. Ensure the conflict monitor will resume normal operation when the AC Line voltage returns above the "restore" level. Ensure the AC Power indicator will remain illuminated when the AC voltage returns above the "restore" level. Should an AC Line power interruption occur while the monitor is in the fault mode, then upon restoration of AC Line power, the monitor will remain in the fault mode and the correct fault and channel indicators will be displayed.

Provide a flash interval of at least 6 seconds and at most 10 seconds in duration following a power-up, an AC Line interruption, or a brownout restore. Ensure the conflict monitor will suspend all fault monitoring functions, close the Output relay contacts, and flash the AC indicator at a rate of 4 Hz \pm 20% with a 50% duty cycle during this interval. Ensure the termination of the flash interval after at least 6 seconds if the Watchdog input has made 5 transitions between the True and False state and the AC Line voltage is greater than the "restore" level. If the watchdog input has not made

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5 transitions between the True and False state within 10 ± 0.5 seconds, the monitor shall enter a WDT error fault condition.

Ensure the conflict monitor will monitor an intersection with a minimum of four approaches using the four-section Flashing Yellow Arrow (FYA) vehicle traffic signal as outlined by the NCHRP 3-54 research project for protected-permissive left turn signal displays. Ensure the conflict monitor will operate in the FYA mode and FYAc (Compact) mode as specified below to monitor each channel pair for the following fault conditions: Conflict, Flash Rate Detection, Red Fail, Dual Indication, and Clearance. Provide a switch to select between the FYA mode and FYAc mode. Provide a switch to select each FYA phase movement for monitoring.

FYA mode

| FYA Signal Head | Phase 1 | Phase 3 | Phase 5 | Phase 7 |
|-----------------------------|---------------------|----------------------|----------------------|----------------------|
| Red Arrow | Channel 9 Red | Channel 10 Red | Channel 11 Red | Channel 12 Red |
| Yellow Arrow | Channel 9 Yellow | Channel 10 Yellow | Channel 11 Yellow | Channel 12 Yellow |
| Flashing Yellow Arrow | Channel 9 Green | Channel 10 Green | Channel 11 Green | Channel 12 Green |
| Green Arrow | Channel 1 Green | Channel 3 Green | Channel 5 Green | Channel 7 Green |

FYAc mode

| FYA Signal Head | Phase 1 | Phase 3 | Phase 5 | Phase 7 |
|-----------------------------|---------------------|---------------------|---------------------|----------------------|
| Red Arrow | Channel 1 Red | Channel 3 Red | Channel 5 Red | Channel 7 Red |
| Yellow Arrow | Channel 1 Yellow | Channel 3 Yellow | Channel 5 Yellow | Channel 7 Yellow |
| Flashing Yellow Arrow | Channel 1 Green | Channel 3 Green | Channel 5 Green | Channel 7 Green |
| Green Arrow | Channel 9 Green | Channel 9 Yellow | Channel 10 Green | Channel 10 Yellow |

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If a FYA channel pair is enabled for FYA operation, the conflict monitor will monitor the FYA logical channel pair for the additional following conditions:

- 1. **Conflict:** Channel conflicts are detected based on the permissive programming jumpers on the program card. This operation remains unchanged from normal operation except for the solid Yellow arrow (FYA clearance) signal.
- 2. Yellow Change Interval Conflict: During the Yellow change interval of the Permissive Turn channel (flashing Yellow arrow) the conflict monitor shall verify that no conflicting channels to the solid Yellow arrow channel (clearance) are active. These conflicting channels shall be determined by the program card compatibility programming of the Permissive Turn channel (flashing Yellow arrow). During the Yellow change interval of the Protected Turn channel (solid Green arrow) the conflict monitor shall verify that no conflicting channels to the solid Yellow arrow channel (clearance) are active as determined by the program card compatibility programming of the Protected Turn channel (solid Green arrow).
- 3. **Flash Rate Detection:** The conflict monitor unit shall monitor for the absence of a valid flash rate for the Permissive turn channel (flashing Yellow arrow). If the Permissive turn channel (flashing Yellow arrow) is active for a period greater than 1600 milliseconds, ensure the conflict monitor triggers and puts the intersection into flash. If the Permissive turn channel (flashing Yellow arrow) is active for a period less than 1400 milliseconds, ensure the conflict monitor does not trigger. Ensure the conflict monitor will remain in the triggered (in fault mode) state until the unit is reset at the front panel or through the external remote reset input. Provide a jumper or switch that will enable and disable the Flash Rate Detection function. Ensure that when the jumper is not present or the switch is in the OFF position the Flash Rate Detection function is enabled. Ensure that when the jumper is present or the switch is in the ON position the Flash Rate Detection function is disabled.
- 4. **Red Monitoring or Absence of Any Indication (Red Failure):** The conflict monitor unit shall detect a red failure if there is an absence of voltage on all four of the inputs of a FYA channel pair (RA, YA, FYA, GA).
- 5. **Dual Indications on the Same Channel:** The conflict monitor unit shall detect a dual indication if two or more inputs of a FYA channel pair (RA, YA, FYA, GA) are "on" at the same time.
- 6. **Short/Missing Yellow Indication Fault (Clearance Error):** The conflict monitor unit shall monitor the solid Yellow arrow for a clearance fault when terminating both the Protected Turn channel (solid Green arrow) interval and the Permissive Turn channel (flashing Yellow arrow) interval.

Ensure that the conflict monitor will log at least nine of the most recent events detected by the monitor in non-volatile EEPROM memory (or equivalent). For each event, record at a minimum the time, date, type of event, status of each field signal indication with RMS voltage, and specific channels involved with the event. Ensure the conflict monitor will log the following events: monitor reset, configuration, previous fault, and AC line. Furnish the signal sequence log that shows all channel states (Greens, Yellows, and Reds) and the Red Enable State for a minimum of 2 seconds prior to the current fault trigger point. Ensure the display resolution of the inputs for the signal sequence log is not greater than 50 ms.

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For conflict monitors used within an Ethernet communications system, provide a conflict monitor with an Ethernet 10/100 Mbps, RJ-45 port for data communication access to the monitor by a local notebook computer and remotely via a workstation or notebook computer device connected to the signal system local area network. The Ethernet port shall be electrically isolated from the conflict monitor's electronics and shall provide a minimum of 1500 Vrms isolation. Integrate monitor with Ethernet network in cabinet. Provide software to retrieve the time and date from a network server in order to synchronize the on-board times between the conflict monitor and the controller. Furnish and install the following Windows based, graphic user interface software on workstations and notebook computers where the signal system client software is installed: 1) software to view and retrieve all event log information, 2) software that will search and display a list of conflict monitor IP addresses and IDs on the network, and 3) software to change the conflict monitor's network parameters such as IP address and subnet mask.

For non-Ethernet connected monitors, provide a RS-232C/D compliant port (DB-9 female connector) on the front panel of the conflict monitor in order to provide communications from the conflict monitor to the 170/2070 controller or to a Department-furnished laptop computer. Electrically isolate the port interface electronics from all monitor electronics, excluding Chassis Ground. Ensure that the controller can receive all event log information through a controller Asynchronous Communications Interface Adapter (Type 170E) or Async Serial Comm Module (2070). Furnish and connect a serial cable from the conflict monitor's DB-9 connector to Comm Port 1 of the 2070 controller. Ensure conflict monitor communicates with the controller. Provide a Windows based graphic user interface software to communicate directly through the same monitor RS-232C/D compliant port to retrieve and view all event log information to a Department-furnished laptop computer. The RS-232C/D compliant port on the monitor shall allow the monitor to function as a DCE device with pin connections as follows:

| Conflict Monitor RS-232C/D (DB-9 Female) Pinout | | | |
|---|----------|-----|--|
| Pin Number | Function | I/O | |
| 1 | DCD | О | |
| 2 | TX Data | O | |
| 3 | RX Data | I | |
| 4 | DTR | I | |
| 5 | Ground | - | |
| 6 | DSR | О | |
| 7 | CTS | I | |
| 8 | RTS | 0 | |
| 9 | NC | - | |

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MONITOR BOARD EDGE CONNECTOR

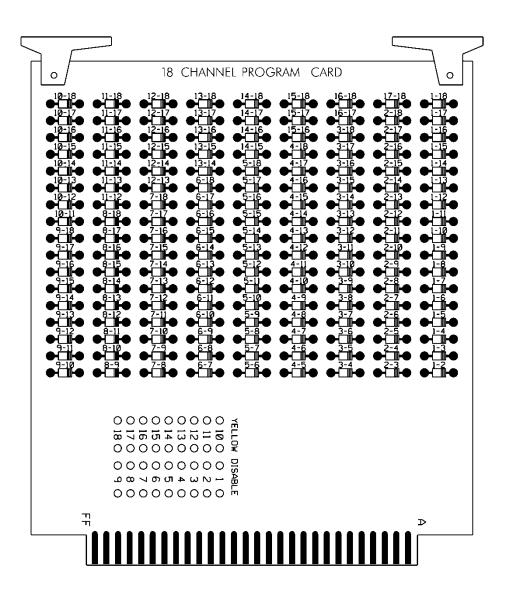
| Pin# | Function (Back Side) | Pin # | Function (Component Side) |
|------|---|-------|------------------------------|
| | | | , |
| 1 | Channel 2 Green | A | Channel 2 Yellow |
| 2 | Channel 13 Green | В | Channel 6 Green |
| 3 | Channel 6 Yellow | C | Channel 15 Green |
| 4 | Channel 4 Green | D | Channel 4 Yellow |
| 5 | Channel 14 Green | E | Channel 8 Green |
| 6 | Channel 8 Yellow | F | Channel 16 Green |
| 7 | Channel 5 Green | Н | Channel 5 Yellow |
| 8 | Channel 13 Yellow | J | Channel 1 Green |
| 9 | Channel 1 Yellow | K | Channel 15 Yellow |
| 10 | Channel 7 Green | L | Channel 7 Yellow |
| 11 | Channel 14 Yellow | M | Channel 3 Green |
| 12 | Channel 3 Yellow | N | Channel 16 Yellow |
| 13 | Channel 9 Green | P | Channel 17 Yellow |
| 14 | Channel 17 Green | R | Channel 10 Green |
| 15 | Channel 11 Yellow | S | Channel 11 Green |
| 16 | Channel 9 Yellow | T | Channel 18 Yellow |
| 17 | Channel 18 Green | U | Channel 10 Yellow |
| | | | |
| 18 | Channel 12 Yellow | V | Channel 12 Green |
| 19 | Channel 17 Red | W | Channel 18 Red |
| 20 | Chassis Ground | X | Not Assigned |
| 21 | AC- | Y | DC Common |
| 22 | Watchdog Timer | Z | External Test Reset |
| 23 | +24VDC | AA | +24VDC |
| 24 | Tied to Pin 25 | BB | Stop Time (Output) |
| 25 | Tied to Pin 24 | CC | Not Assigned |
| 26 | Not Assigned | DD | Not Assigned |
| 27 | Relay Output, Side #3, N.O. | EE | Relay Output,Side |
| | - · · · · · · · · · · · · · · · · · · · | | #2,Common |
| 28 | Relay Output, Side #1, N.C. | FF | AC+ |
| | | | |

⁻⁻ Slotted for keying between Pins 17/U and 18/V

CONFLICT PROGRAM CARD PIN ASSIGNMENTS

| Pin # | Function (Back Side) | Pin # | Function (Component |
|-------|-----------------------|--------------|------------------------|
| | | | Side) |
| 1 | Channel 2 Green | A | Channel 1 Green |
| 2 | Channel 3 Green | В | Channel 2 Green |
| 3 | Channel 4 Green | C | Channel 3 Green |
| 4 | Channel 5 Green | D | Channel 4 Green |
| 5 | Channel 6 Green | Е | Channel 5 Green |
| 6 | Channel 7 Green | F | Channel 6 Green |
| 7 | Channel 8 Green | Н | Channel 7 Green |
| 8 | Channel 9 Green | J | Channel 8 Green |
| 9 | Channel 10 Green | K | Channel 9 Green |
| 10 | Channel 11 Green | L | Channel 10 Green |
| 11 | Channel 12 Green | M | Channel 11 Green |
| 12 | Channel 13 Green | N | Channel 12 Green |
| 13 | Channel 14 Green | P | Channel 13 Green |
| 14 | Channel 15 Green | R | Channel 14 Green |
| 15 | Channel 16 Green | S | Channel 15 Green |
| 16 | N/C | T | PC AJAR |
| 17 | Channel 1 Yellow | U | Channel 9 Yellow |
| 18 | Channel 2 Yellow | V | Channel 10 Yellow |
| 19 | Channel 3 Yellow | \mathbf{W} | Channel 11 Yellow |
| 20 | Channel 4 Yellow | X | Channel 12 Yellow |
| 21 | Channel 5 Yellow | Y | Channel 13 Yellow |
| 22 | Channel 6 Yellow | Z | Channel 14 Yellow |
| 23 | Channel 7 Yellow | AA | Channel 15 Yellow |
| 24 | Channel 8 Yellow | BB | Channel 16 Yellow |
| | | | |
| 25 | Channel 17 Green | CC | Channel 17 Yellow |
| 26 | Channel 18 Green | DD | Channel 18 Yellow |
| 27 | Channel 16 Green | EE | PC AJAR (Program Card) |
| 28 | Yellow Inhibit Common | FF | Channel 17 Green |

⁻⁻ Slotted for keying between Pins 24/BB and 25/CC



E. Preemption and Sign Control Box

Provide preemption and sign control box to operate in a Model 332 and Model 336S cabinet. Provide hardware to mount the box to the cage of the cabinet to ensure the front side is facing the opposite side of the cabinet. Furnish the material of the box from a durable finished metallic or thermoplastic case. Ensure the size of the box is not greater than $7(1) \times 5(w) \times 5(d)$ inches. Ensure that no modification is necessary to mount the box on the cabinet cage.

Provide the following components in the preemption and sign control box: relays, fuses, terminal blocks, MOVs, resistor, RC network, lamp, and push button switch.

Provide UL Listed or Recognized relay K1 as a DPDT enclosed relay (120 VAC, 60 Hz coil) with an 8-pin octal-style plug and associated octal base. Provide contact material made of AgCdO with a 10 amp, 240 VAC rating. Ensure the relay has a specified pickup voltage of 102 VAC.

Provide relay SSR1 as a Triac SPST normally open solid state relay that is rated for 120 VAC input and zero-crossing (resistive load) 25 amp @ 120 VAC output. Ensure the relay turns on at 90 Vrms within 10 ms and turns off at 10 Vrms within 40 ms. Ensure the relay has physical

characteristics as shown in the wiring detail in Figure 1. Provide 4 terminal screws with saddle clamps.

Provide fuses F1 and F2 as a UL Listed ¼" x 1-1/4" glass tube rated at 250 volts with a 10kA interrupting rating. Ensure F1 non-delay (fast-acting) and F2 slow-blow (time-delay) fuses have a maximum opening times of 60 minutes and 120 seconds for currents of 135 and 200 percent of the ampere rating, respectively. Ensure F2 slow-blow (time-delay) fuses have a minimum opening times of 12 seconds at 200 percent of the ampere rating. Provide fuse holders that are UL Recognized panel-mounted holders rated 250V, 15 ampere minimum with bayonet-type knobs which accept ¼" x 1-1/4" glass tube fuses.

Provide terminal blocks that are rated for 300V and are made of electrical grade thermoplastic or thermosetting plastic. Ensure each terminal block is of closed back design and has recessed-screw terminals with molded barriers between terminals. Ensure each terminal block is labeled with a block designation. Ensure each terminal is labeled with the function and a number.

Provide 3/4-inch diameter radial lead UL-recognized metal oxide varistors (MOVs) that have electrical performance as outlined below.

| PROPERTIES OF MOV SURGE PROTECTOR | | |
|---|---------------|--|
| Maximum Continuous Applied Voltage at | 150 VAC (RMS) | |
| 185° F | 200 VDC | |
| Maximum Peak 8x20µs Current at 185° F | 6500 A | |
| Maximum Energy Rating at 185° F | 80 J | |
| Voltage Range 1 mA DC Test at 77° F | 212-268 V | |
| Max. Clamping Voltage 8x20µs, 100A at 77° F | 395 V | |
| Typical Capacitance (1 MHz) at 77° F | 1600 pF | |

Provide resistor R1 as a 2K ohm, 12 watt, wirewound resistor with tinned terminals and attaching leads. Ensure the resistor is spaced apart from surrounding wires.

Provide a LED or incandescent lamp that has a voltage rating of 120 VAC with a minimum life rating at 50,000 hours.

Wire the preemption and sign control box as shown in Figure 1.

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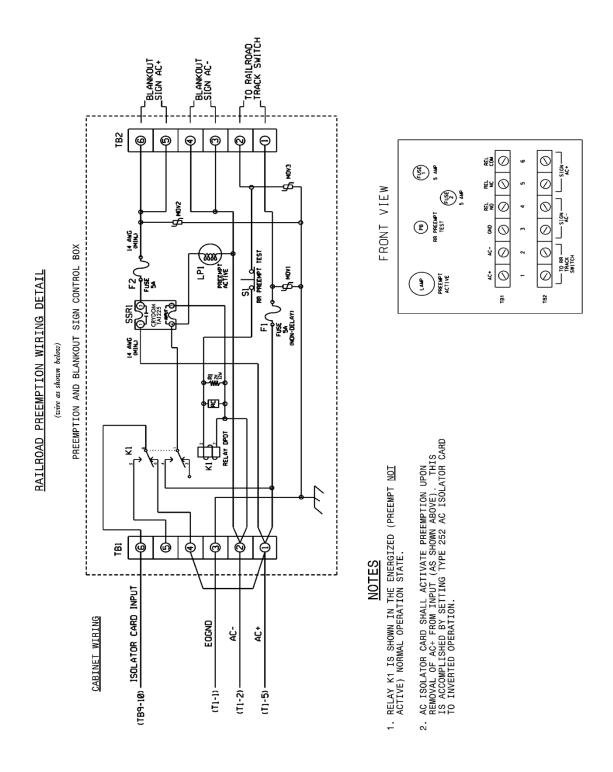


Figure 1

6.4. MATERIALS – TYPE 170 DETECTOR SENSOR UNITS

Furnish detector sensor units that comply with Chapter 5 Section 1, "General Requirements," and Chapter 5 Section 2, "Model 222 & 224 Loop Detector Sensor Unit Requirements," of the CALTRANS "Transportation Electrical Equipment Specifications" dated March 12, 2009 with Erratum 1.

6.5. MATERIALS – TYPE 2070E CONTROLLERS

Conform to CALTRANS *Transportation Electrical Equipment Specifications* (TEES) (dated March 12, 2009, plus Errata 1 dated January 21, 2010) except as required herein.

Furnish Model 2070E controllers. Ensure that removal of the CPU module from the controller will place the intersection into flash.

The Department will provide software at the beginning of the burning-in period. Contractor shall give 5 working days notice before needing software. Program software provided by the Department.

Provide Model 2070E controllers with the latest version of OS9 operating software and device drivers, composed of the unit chassis and at a minimum the following modules and assemblies:

- MODEL 2070-1E, CPU Module, Single Board, with 8Mb Datakey (blue in color)
- MODEL 2070-2A or approved MODEL 2070-2E, Field I/O Module (FI/O)
 - Note: Configure the Field I/O Module to disable both the External WDT Shunt/Toggle Switch and SP3 (SP3 active indicator is "off")
- MODEL 2070-3B, Front Panel Module (FP), Display B (8x40)
- MODEL 2070-4, Power Supply Module, 10 AMP
- MODEL 2070-7A, Async Serial Com Module (9-pin RS-232)

Furnish one additional MODEL 2070-7A, Async Serial Com Module (9-pin RS-232) for all master controller locations.

For each master location and central control center, furnish a U.S. Robotics V.92 or approved equivalent auto-dial/auto-answer external modem to accomplish the interface to the Department-furnished microcomputers. Include all necessary hardware to ensure telecommunications.

7. RELOCATE EXISTING EMERGENCY VEHICLE DETECTION EQUIPMENT 7.1.DESCRIPTION

Relocate and reinstall existing emergency vehicle preemption equipment as required.

7.2.MATERIALS

Ensure that any emergency vehicle preemption equipment is fully compatible with the existing preemption system employed by the City of Havelock West End Station.

Furnish emergency vehicle detector cable to provide power between the detector and corresponding phase selector inside the traffic signal cabinet. Provide cable that is fully compatible with the existing emergency vehicle detector.

7.3.CONSTRUCTION METHODS

Install emergency vehicle detectors overhead on messenger cable using required attachment hardware and in accordance with the manufacturer's instructions. Mount detectors such that it permits a direct, unobstructed line-of-sight to vehicle approaches.

Transfer existing phase selector cards from the existing traffic signal control cabinet to the appropriate slot in the new traffic signal control cabinet. Test the installation with the cooperation of the West End Station.

7.4.MEASUREMENT AND PAYMENT

Relocate emergency vehicle detector will be measured and paid as the actual number of existing emergency vehicle detectors relocated to a different position at an intersection and accepted.

Relocate emergency vehicle phase selectors will be measured and paid as the actual number of existing emergency vehicle phase selectors transferred from existing cabinets and installed in new cabinets at an intersection and accepted.

Emergency vehicle detector cable will be measured and paid as the actual number of linear feet of detector cable furnished, installed and accepted.

No measurement will be made of hardware or fasteners required to mount emergency vehicle detectors on messenger cable (i.e., span wire) as such equipment will be considered incidental to relocating emergency vehicle detectors.

Payment will be made under:

| Relocate Emergency Vehicle Detector | Each |
|--|------|
| Relocate Emergency Vehicle Phase Selectors | |
| Emergency Vehicle Detector Cable | |

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Project R-5516 Craven County

Project Special Provisions Structure and Culverts

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For Piles, See Geotechnical Special Provisions. For MSE Retaining Walls, See Geotechnical Special Provisions.



Project R-5516 Craven County

PROJECT SPECIAL PROVISIONS STRUCTURE AND CULVERTS

MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE AT STATION_32+25.84 -YEB01-

(8-13-04)

1.0 GENERAL

Maintain traffic on US 70 as shown in Traffic Control Plans and as directed by the Engineer.

Provide a minimum temporary vertical clearance of 17'-0" at all times during construction.

Submit plans and calculations for review and approval for protecting traffic and bracing girders, as described herein, at the above station before beginning work at this location. Have the drawings and design calculations prepared, signed, and sealed by a North Carolina Registered Professional Engineer. The approval of the Engineer will not relieve the Contractor of the responsibility for the safety of the method or equipment.

2.0 PROTECTION OF TRAFFIC

Protect traffic from any operation that affords the opportunity for construction materials, equipment, tools, etc. to be dropped into the path of traffic beneath the structure. Based on Contractor means and methods determine and clearly define all dead and live loads for this system, which, at a minimum, shall be installed between beams or girders over any travelway or shoulder area where traffic is maintained. Install the protective system before beginning any construction operations over traffic. In addition, for these same areas, keep the overhang falsework in place until after the rails have been poured.

3.0 Bracing Girders

Brace girders to resist wind forces, weight of forms and other temporary loads, especially those eccentric to the vertical axis of the member during all stages of erection and construction. Before casting of intermediate diaphragms, decks, or connecting steel diaphragms do not allow the horizontal movement of girders to exceed ½ inch.

4.0 BASIS OF PAYMENT

Payment at the contract unit prices for the various pay items will be full compensation for the above work.

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TEMPORARY BENTS

(9-30-11)

When girder erection requires the use of temporary bents, design, construct, maintain and afterwards remove the temporary bents in accordance with the Standard Specifications and this Special Provision. For the purpose of this Special Provision, the term "temporary bents" includes girder erection temporary bents, vertical shoring and proprietary shoring systems.

Temporary bents for structures over railroads shall maintain a minimum horizontal clearance of 25' from center of track.

Design temporary bents in accordance with the 1995 AASHTO Guide Design Specification for Bridge Temporary Works (including the 2008 Interim Revisions) and the Project Special Provision entitled "Falsework and Formwork". The design calculations and detailed drawings of the structural components shall be signed and sealed by a North Carolina Registered Professional Engineer.

Submit design calculations and detailed drawings of temporary bents to the Engineer for review and approval. The detailed drawings shall show the position of the temporary bents in relationship to the existing travel way, the location of the temporary bents with respect to the ends of the girders, the top of support elevations for setting girders in the cambered position, and a girder erection procedure. For stream crossings, determine the bent stability assuming a scour depth equal to 250% of the pile diameter or width below the existing bed elevation. The Engineer may require a more detailed analysis of scour depth for temporary bents containing more than a single row of piles.

Include all material specifications for new and used materials in the detail drawings. In addition, show the location of the used materials indicating condition of the material, the location and geometry of existing but unused holes, attachments left over from previous use and any other irregularities in the material. Account for the condition of all used materials in the design calculations.

For all manufactured components, provide engineering data supplied by the manufacturer. For proprietary shoring systems, evaluate differential leg loading.

Provide access to all new and used materials for inspection prior to assembly.

Before the temporary bent is loaded, the contractor shall inspect the bent in the presence of the Engineer, and submit a written statement certifying that the erected bent complies with the approved detailed drawings. Any condition or material that does not comply with the accepted drawings, or any other condition deemed unsatisfactory by the Engineer, is cause for rejection until corrections are made.

Remove temporary bents in such a manner as to permit the structure to uniformly and gradually take the stresses due to its own weight. During removal do not disturb or otherwise damage the finished work.

Unless otherwise specified, temporary bents will not be directly measured. Payment will be full compensation at the contract unit prices for the various pay items requiring temporary bents.

PLACING LOAD ON STRUCTURE MEMBERS

(11-27-12)

The 2012 Standard Specifications shall be revised as follows:

In **Section 420-20 – Placing Load on Structure Members** replace the first sentence of the fifth paragraph with the following:

Do not place vehicles or construction equipment on a bridge deck until the deck concrete develops the minimum specified 28 day compressive strength and attains an age of at least 7 curing days.

DISC BEARINGS (2-3-14)

1.0 GENERAL

This item consists of furnishing, fabrication and installation of disc bearings in accordance with AASHTO LRFD Bridge Design Specifications, the Standard Specifications, the recommendations of the manufacturer, the details shown on the plans and as specified herein. Disc Bearings consist of a polyether urethane structural element (elastomeric disc) confined by upper and lower steel bearing plates. Equip disc bearings with a shear restriction mechanism (shear pin) to prevent movement of the disc. Supply disc bearings as fixed bearings and guided expansion bearings as designated by the Contract Documents.

Fixed disc bearings allow rotation but no longitudinal or transverse movement in the bearing plane. Fixed bearings consist of a steel sole plate, an elastomeric disc, a shear pin, a steel upper bearing plate, a steel lower bearing plate, a steel masonry plate, a preformed bearing pad, anchor bolts, nuts and washers.

Guided expansion disc bearings allow rotation and only longitudinal movement in the bearing plane. Guided expansion disc bearings consist of a steel sole plate, a polished stainless steel sheet welded to the bottom of the sole plate within the sliding region, a steel upper bearing plate, a layer of virgin polytetrafluoroethylene (PTFE) material bonded to the top and sides of the upper plate within the sliding regions, guide bars welded to the bottom of the sole plate surrounding the sliding region to restrict transverse movement, polished stainless steel sheets welded to the sides of the guide bars within the sliding regions, an elastomeric disc, a shear pin, a steel lower bearing plate, a steel masonry plate, a preformed bearing pad, anchor bolts, nuts, washers, pipe sleeves, a closure plate, grout and various sizes of standard pipe, and any other necessary material as detailed on the plans. Align the stainless steel sheet on the bottom of the sole plate with the PTFE material on the top of the upper bearing plate. Align the PTFE material on the sides of the upper bearing plate with the stainless steel sheets on the sides of the guide bars.

2.0 MATERIALS

Use disc bearings produced by the same manufacturer.

Use AASHTO M270 Grade 50W (345W) or Grade 50 (345) for all steel plates except the stainless steel sheets in the disc bearings. Clean, coat, and seal the plates in the disc bearing assemblies except for the areas with special facings and the areas that come in contact with the elastomer disc, in accordance with the Special Provision for "Thermal Sprayed Coatings (Metallization)". The surfaces shall be coated to a thickness of 8 mils minimum on all external parts. Repair surfaces that are abraded or damaged after the application of metallizing in accordance with the Special Provision for "Thermal Sprayed Coatings (Metallization)".

Provide anchor bolts and nuts in accordance with the Standard Specifications.

When the maximum plan dimension of the sheet is 12" or less, provide a stainless steel sheet in expansion disc bearings that is at least 16 gage or 1/16". When the maximum plan dimension is greater than 12", provide a stainless steel sheet that is at least 11 gage or 1/8". Ensure that all stainless steel sheets are in conformance with ASTM A240/A167 Type 304 and polished to a minimum #8 mirror surface finish.

Blast clean the surfaces of the steel sole plate and the steel guide bars that will be attached to the stainless steel sheets to a near white condition in accordance with the Standard Specifications. Position and clamp the back of the stainless steel sheets in contact with the steel sole plate and the steel guide bars. Apply the stainless steel sheets to the blast cleaned surfaces of the steel sole plate and the steel guide bars as soon as possible after blasting and before any visible oxidation of the blast cleaned surfaces occurs. Weld the stainless steel sheets continuously around the perimeter using a tungsten inert gas, wire-fed welder.

For the PTFE sheets bonded to the top and side sliding surfaces of the steel upper bearing plate, used as mating surfaces for the stainless steel sheets attached to the steel sole plate and the guide bars, provide an unfilled virgin PTFE sheet (recessed) or a glass-fiber filled PTFE sheet, resulting from skiving billets formed under hydraulic pressure and heat. Provide resin that conforms to the requirements of ASTM D4894 or D4895.

To bond the PTFE sheets and the steel upper bearing plate, use heat cured high temperature epoxy capable of withstanding temperature of –320°F to 500°F.

Weld the guide bars in expansion bearings to the bottom of the sole plate. Alternatively, integrate the guide bars and sole plate from the same piece of steel, ensuring that the required dimensions are provided. Provide 1/16" clearances between the stainless steel sheets attached to the side sliding surfaces of the guide bars and the PTFE sheet attached to the side sliding surface of the steel upper bearing plate.

Mold the polyether urethane structural element (elastomeric disc) from a polyether urethane compound. The top and bottom surfaces of the disc shall be roughened. Ensure that the physical properties of the polyether urethane conform to the following requirements:

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| Physical Property | ASTM Test | Requirements | | |
|--|-----------|--------------|------|--|
| | Method | Min. | Max. | |
| Hardness, Type D Durometer | D2240 | 60 | 64 | |
| Tensile Stress psi At 100% elongation At 200% elongation | D412 | 2000 3700 | | |
| Tensile Strength psi | D412 | 5000 | | |
| Ultimate Elongation % | D412 | 220 | | |
| Compression Set % 22 hrs. at 158°F | D395 | | 40 | |

3.0 DESIGN

Design the disc bearings for the loads and movements shown on the contract plans. However, use the anchor bolt size, length, spacing and masonry plate thickness as shown on the contract plans and provide an overall bearing height within ½ inch of the bearing assembly height shown on the contract plans. Either combine and cast the sole plate and upper bearing plate (for fixed bearings), the sole plate and guide bars (for expansion bearings), and the lower bearing plate and masonry plate (for fixed and expansion bearings) as a single unit or weld together prior to the installation of the disc.

Ensure access and removal of anchor bolt nut is not in conflict with the upper bearing plate, guide bars or sole plate.

When designing the bearings, use the following allowable bearing stresses:

On polyether urethane structural element: 5000 psi

On PTFE Sliding Surface, filled or unfilled PTFE (recessed): 3500 psi

Submit eight sets of shop drawings and one set of design calculations for review, comments and acceptance. Have a North Carolina Registered Professional Engineer check and seal the shop drawings and design calculations.

After the Engineer reviews the drawings and, if necessary, corrections are made, submit one 22" x 34" reproducible set of the working drawings.

4.0 SAMPLING AND TESTING

A. Sampling

The manufacturer is responsible for randomly selecting and testing sample bearings from completed lots of bearings. The manufacturer is also responsible for certifying that the completed bearings and their components have been tested and are in compliance with the requirements of this Special Provision. The manufacturer shall furnish the results of the tests to the Materials and Tests Engineer.

B. Testing

1. Proof Load Test

Load a test bearing to 150% of the bearing's rated design capacity and simultaneously subject it to a rotational range of 0.02 radians (1.146°) for a period of 1 hour.

Have the bearing visually examined both during the test and upon disassembly after the test. Any resultant visual defects, such as extruded or deformed elastomer or PTFE, damaged seals or rings, or cracked steel is cause for rejection.

Keep continuous and uniform contact between the polyether urethane element and the bearing plates and between the stainless steel sheets and the PTFE sheets (for expansion bearings) for the duration of the test. Any observed lift-off or separation is cause for rejection.

2. Sliding Coefficient of Friction

For all guided expansion bearings, measure the sliding coefficient of friction at the bearing's design capacity in accordance with the test method described below, and on the fifth and fiftieth cycles, at a sliding speed of 1 in/min.

Calculate the sliding coefficient of friction as the horizontal load required to maintain continuous sliding of one bearing, divided by the bearing's vertical design capacity.

The test results are evaluated as follows:

A maximum measured sliding coefficient of friction of 3%.

A visual examination both during and after the test. Any resultant visual defects, such as bond failure, physical destruction, cold flow of PTFE to the point of debonding, or damaged components is cause for rejection of the lot.

Using undamaged test bearings in the work is permitted.

3. Test Method

The test method and equipment shall meet the following requirements:

- a. Arrange the test to determine the coefficient of friction on the first movement of the manufactured bearing.
- b. Clean the bearing surface prior to testing.
- c. Conduct the test at maximum working stress for the PTFE surface with the test load applied continuously for 12 hours prior to measuring friction.
- d. Determine the first movement static and dynamic coefficient of friction of the test bearing at a sliding speed of less than 1 in/min, not to exceed:

0.04 unfilled PTFE

0.08 filled PTFE

e. Subject the bearing specimen to 100 movements of at least 1 inch of relative movement and, if the test facility permits, the full design movement at a speed of less than 1 ft/min. Following this test determine the static and kinetic coefficient of friction again. The specimen is considered a failure if it exceeds the values measured in (d) above or if it shows any signs of bond failure or other defects.

Bearings represented by test specimens passing the above requirements are approved for use in the structure subject to on-site inspection for visible defects.

5.0 Installation

Store disc bearings delivered to the bridge site upright and under cover on a platform above the ground surface. Protect the bearings from injury at all times and, before placing the bearings, dry and clean all dirt, oil, grease or other foreign substances from the bearing. Do not disassemble the bearings during installation, except at the manufacturer's direction. Lift bearing assemblies by their bottom surfaces only, unless lifting brackets that have been designed and approved by the manufacturer are used. Ensure that the polyether urethane disc is not exposed to direct flame or sparks. Place the bearings in accordance with the recommendations of the manufacturer, Contract Drawings, and as directed by the Engineer. If there is any discrepancy between the recommendations of the manufacturer, Special Provisions, and Contract Drawings, the Engineer is the sole judge in reconciling any such discrepancy.

Provide preformed bearing pads under the masonry plates in accordance with Article 1079-1 of the Standard Specifications.

Do not install any bearing before the Engineer approves it.

6.0 BASIS OF PAYMENT

Payment for all disc bearings will be at the lump sum contract price bid for "Disc Bearings" which includes full compensation for furnishing all disc bearings, labor,

materials, tools, equipment, testing and incidentals required to complete the work in accordance with the Standard Specifications, this Special Provision, the manufacturer's requirements and as directed by the Engineer.

THERMAL SPRAYED COATINGS (METALLIZATION)

(9-30-11)

1.0 DESCRIPTION

Apply a thermal sprayed coating (TSC) and sealer to metal surfaces as specified herein when called for on the plans or by other Special Provisions, or when otherwise approved by the Engineer in accordance with the SSPC-CS 23.00/AWS C2.23/NACE No. 12 Specification. Only Arc Sprayed application methods are used to apply TSC coatings, the Engineer must approve other methods of application.

2.0 QUALIFICATIONS

Only use NCDOT approved TSC Contractors meeting the following requirements:

- 4. The capability of blast cleaning steel surfaces to SSPC SP-5 and SP-10 Finishes.
- 5. Employ Spray Operator(s) qualified in accordance with AWS C.16/C2.16M2002 and Quality Control Inspector(s) who have documented training in the applicable test procedures of ASTM D-3276 and SSPC-CS 23.00.

A summary of the contractor's related work experience and the documents verifying each Spray Operator's and Quality Control Inspector's qualifications are submitted to the Engineer before any work is performed.

3.0 MATERIALS

Provide wire in accordance with the metallizing equipment manufacturer's recommendations. Use the wire alloy specified on the plans which meets the requirements in Annex C of the SSPC-CS 23.00 Specification. Have the contractor provide a certified analysis (NCDOT Type 2 Certification) for each lot of wire material.

Apply an approved sealer to all metallized surfaces in accordance with Section 9 of SSPC-CS 23. The sealer must either meet SSPC Paint 27 or is an alternate approved by the Engineer.

4.0 SURFACE PREPARATION AND TSC APPLICATION

Grind flame cut edges to remove the carbonized surface prior to blasting. Bevel all flame cut edges in accordance with Article 442-10(D) regardless of included angle. Blast clean surfaces to be metallized with grit or mineral abrasive in accordance with Steel Structures

Painting Council SSPC SP-5/10(as specified) to impart an angular surface profile of 2.5 - 4.0 mils. Surface preparation hold times are in accordance with Section 7.32 of SSPC-CS 23. If flash rusting occurs prior to metallizing, blast clean the metal surface again. Apply the thermal sprayed coating only when the surface temperature of the steel is at least 5°F above the dew point.

At the beginning of each work period or shift, conduct bend tests in accordance with Section 6.5 of SSPC-CS 23.00. Any disbonding or delamination of the coating that exposes the substrate requires corrective action, additional testing, and the Engineer's approval before resuming the metallizing process.

Apply TSC with the alloy to the thickness specified on the plans or as provided in the table below. All spot results (the average of 3 to 5 readings) must meet the minimum requirement. No additional tolerance (as allowed by SSPC PA-2) is permitted. (For Steel Beams: For pieces with less than 200 ft² measure 2 spots/surface per piece and for pieces greater than 200 ft² add 1 additional spots/surface for each 500 ft²).

| Application | Thickness | Alloy | Seal Coat |
|------------------------|-----------|------------------------|-----------|
| Pot Bearings | 8 mil | 85/15 Zinc (W-Zn-Al-2) | 0.5 mil |
| Armored Joint Angles | 8 mil | 85/15 Zinc (W-Zn-Al-2) | 0.5 mil |
| Modular Joints | 8 mil | 99.99% Zn (W-Zn-1) | 0.5 mil |
| Expansion Joint Seals | 8 mil | 99.99% Zn (W-Zn-1) | 0.5 mil |
| Optional Disc Bearings | 8 mil | 85/15 Zinc (W-Zn-Al-2) | 0.5 mil |

When noted on the plans or as specified in the above chart, apply the sealer to all metallized surfaces in accordance with the manufacturer's recommendations and these provisions. Apply the seal coat only when the air temperature is above 40°F and the surface temperature of the steel is at least 5°F above the dew point. If the sealer is not applied within eight hours after the final application of TSC, the applicator verifies acceptable TSC surfaces and obtains approval from the Engineer before applying the sealer.

5.0 INSPECTION FREQUENCY

The TSC Contractor must conduct the following tests at the specified frequency and the results documented in a format approved by the Engineer.

| Test/Standard | Location | Frequency | Specification |
|---------------------|--------------|---------------------|--------------------------------|
| Ambient Conditions | Site | Each Process | 5°F above the dew point |
| Abrasive Properties | Site | Each Day | Size, angularity, cleanliness |
| Surface Cleanliness | All Surfaces | Visual All Surfaces | SSPC-SP-10 Atmospheric Service |

| SSPC Vis 1 | | | SSPC-SP - 5 Immersion Service |
|--------------------------|-----------------|---|---|
| Surface Profile | Random Surfaces | 3 per 500 ft ² | 2.5 - 4.0 mils |
| ASTM D-4417 Method C | | | |
| Bend Test | Site | 5 per shift | Pass Visual |
| SSPC-CS 23.00 | | | |
| Thickness | Each Surface | Use the method in PA- | Zn - 8 mils minimum |
| SSPC PA-2R | | 2 Appendix 3 for Girders and Appendix | Al - 8 mils minimum |
| SSPC-CS 23.00 | | 4 for frames and miscellaneous steel. See Note 1. | Zn Al - 8 mils minimum |
| | | | Areas with more than twice the minimum thickness are inspected for compliance to the adhesion and cut testing requirements of this specification. |
| Adhesion ASTM 4541 | Random Surfaces | 1 set of 3 per 500 ft ² | Zn > 500 psi |
| | Splice Areas | | Al > 1000 psi |
| | | | Zn Al > 750 psi |
| Cut Test - SSPC-CS 23.00 | Random Surfaces | 3 sets of 3 per 500 ft ² | No peeling or delamination |
| Job Reference Std. | Site | 1 per job | Meets all the above requirements |
| SSPC-CS 23.00 | | | |

6.0 REPAIRS

All Repairs are to be performed in accordance with the procedures below, depending on whether the repair surface is hidden or exposed. As an exception to the following, field welded splices on joint angles and field welding bearing plates to girders may be repaired in accordance with the procedures for hidden surfaces.

For hidden surfaces (including but not limited to interior girders, interior faces of exterior girders, and below-grade sections of piles):

- 1. Welding of metallized surfaces may be performed only if specifically permitted by the Engineer. Remove metallizing at the location of field welds by blast cleaning (SSPC SP-6 finish), or hand (SSPC SP-2 finish) or power tool cleaning (SSPC SP-3 finish) just prior to welding. Clean sufficiently to prevent contamination of the weld. All repairs to welded connections are metallized in accordance with SSPC CS 23.00.
- 2. Minor areas less than or equal to 0.1 ft² exposing the substrate are metallized in accordance with SSPC CS 23.00 or painted in accordance with ASTM A780, "Repair of Damaged and Uncoated Areas of Hot Dip Galvanized Coatings."
- 3. Large areas greater than $0.1~{\rm ft^2}$ exposing the substrate are metallized in accordance with SSPC CS 23.00.

- 4. Damaged (burnished) areas not exposing the substrate with less than the specified coating thickness are metallized in accordance with SSPC CS 23.00 or painted in accordance with ASTM A780, "Repair of Damaged and Uncoated Areas of Hot Dip Galvanized Coatings."
- 5. Damaged (burnished) areas not exposing the substrate with more than the specified coating thickness are not repaired.
- 6. Defective coating is repaired by either method 2 or 3 depending on the area of the defect.

For Exposed Surfaces (including but not limited to exterior faces of exterior girders and above-grade sections of piles):

- 1. Welding of metallized surfaces may be performed only if specifically permitted by the Engineer. Remove metallization at the location of field welds by blast cleaning (SSPC SP-6 finish), or hand (SSPC SP-2 finish) or power tool cleaning (SSPC SP-3 finish) just prior to welding. Clean sufficiently to prevent contamination of the weld. All repairs to welded connections are metallized in accordance with SSPC CS 23.00.
- 2. All areas exposing the substrate are metallized in accordance with SSPC CS 23.00
- 3. Defective coating is repaired by either method 2 or 3 depending on the area of the defect.

7.0 TWELVE MONTH OBSERVATION PERIOD

The contractor maintains responsibility for the coating system for a twelve (12) month observation period beginning upon the satisfactory completion of all the work required in the plans or as directed by the engineer. The contractor must guarantee the coating system under the payment and performance bond (refer to Article 109-10). To successfully complete the observation period, the coating system must meet the following requirements after twelve(12) months service:

- No visible rust, contamination or application defect is observed in any coated area.
- Painted surfaces have a uniform color and gloss.
- Surfaces have an adhesion of no less than 500 psi when tested in accordance with ASTM D-4541.

8.0 BASIS OF PAYMENT

The contract price bid for the bridge component to which the coating is applied will be full compensation for the thermal sprayed coating.

EXPANSION JOINT SEALS

(9-30-11)

1.0 GENERAL

The work covered by this Special Provision consists of furnishing and installing the expansion joint seals as shown on the contract drawings. All materials, labor, equipment and incidentals necessary for the proper installation of the expansion joint seals are included.

2.0 MATERIAL

Provide expansion joint seals capable of accommodating a total movement measured parallel to the centerline of the roadway as shown on plans.

Provide an elastomeric component for each expansion joint seal that is a continuous unit for the entire length of the joint. Do not field splice the elastomeric component. Only vulcanized shop splicing of the elastomeric component is permitted. The minimum length of an elastomeric component before shop splicing is 20 feet. However, one piece shorter than 20 feet is permitted. Provide an elastomeric component that is clearly shop marked to indicate the top side and joint location of the elastomeric component. On skewed bridges, or under unsymmetrical conditions, clearly mark the left side of the elastomeric component. Left is defined as being on the left when facing in the direction of increasing station. Inspect the seals upon receipt to ensure that the marks are clearly visible upon installation.

Make sure the convolution of the gland does not project above the top of the hold-down plates when the joint opening is in the most compressed condition. Use either elastic polychloroprene (neoprene) or ethyl propylene diene monomer (EPDM) for the elastomer that meets the following minimum properties:

| | ASTM TEST METHOD | REQUIREMENTS |
|-------------------------------------|---------------------|--|
| Hardness, Durometer - Shore A | D2240 | 60 ± 5, Neoprene (upward corrugated shape - fabric reinforced) |
| | | 75 ± 5, EPDM and Neoprene (upward non-corrugated shape) |
| | | 80 ± 5, EPDM (upward corrugated shape-fabric reinforced) |
| Tensile Strength | D412 | 2000 psi (min.) |
| Elongation at Break | D412 | 250% (min.) |
| Width of Gland in Relaxed Condition | N/A | 10" ± 0.25" |

| Thickness of Upturned portion of gland | N/A | 0.25" non-corrugated shape, -0.032" to +0.032" |
|--|-----|---|
| Thickness of Upturned portion of gland | N/A | 0.1875" corrugated shape, -0.032" to +0.032" |
| Thickness of Flat portion of gland | N/A | 0.1563", -0.032" to +0.032" |

For fabric reinforced glands, submit one unreinforced sample per lot number, up to 500 feet of Expansion Joint Seal, to the Engineer for testing.

Only field splice hold-down plates at crown points, at abrupt changes in the deck slab cross slope, and on lane lines. Splicing within travel lanes is not permitted and splicing on edge lines is not required. Field splice hold-down plates between the edge line and gutter upturn and where necessary for proper installation and alignment is permitted. Show all splice locations on the working drawings for approval. For the location of lane markings at the expansion joint seal, see the Structure plans. At the splice locations, locate the hold-down bolts 3 inches from the end of the hold-down plate. At splice locations where changes in deck slab cross slope occur, cut the ends of hold-down plates parallel to the bridge centerline for skews less than 80° and greater than 100°.

Do not use welded shop splices in hold-down plates.

3.0 SHOP DRAWINGS

Submit nine sets of working drawings to the Engineer for review, comments and acceptance. Show complete details drawn to scale and include:

- The proposed template details including the makeup of the template
- The proposed method of holding the base angle assembly in place while concrete is cast around it
- The proposed procedure to correct for the effects of beam movement and rotation when setting width of joint opening
- The proposed chronology of installation including the sequence and direction of the concrete casting
- The details of cross connectors between base angles, such as steel bars with slots bolted
 to angles, to maintain evenness between the adjacent base angles while accommodating
 movement that occurs when concrete is cast. Indicate when bolts are loosened to allow
 movement.
- The proposed method for removing the hold-down plate
- A section detail through the joint showing horizontal offset dimensions of the base angles from the centerline joint. This detail is required when the vertical face of the joint opening is not perpendicular to the roadway surface (e.g. when the roadway grade is significant).

Have someone other than the one who prepares the drawing check all detailed drawings and include the signatures of both the drafter and checker on each sheet of the drawings. The Engineer returns unchecked drawings to the Contractor. Provide all completed drawings well in advance of the scheduled installation time for the expansion joint seal.

4.0 Installation

Provide supports for the base angle assembly at a maximum spacing of 9 feet. Place supports near field splices of base angles to ensure that field splices are straight and even. Provide base angles with ½" diameter weep holes at 12 inch centers to allow bleeding of trapped air and/or water. Do not obstruct the weep holes with falsework. Make the bottom of the trough parallel to grade and the sides parallel to the sides of the expansion joint seal.

For damaged areas, depressions, spalls, cracks, or irregularities of curbs or decks adjacent to the expansion joint, submit a proposed method of repair and repair material specifications for approval.

If the Engineer deems any aspects of the expansion joint seals unacceptable, make necessary corrections.

5.0 Inspection

When concrete is cast, use a non-aluminum, 10 foot, true to line straight edge to check and grade the top of the slab on each side of the joint to ensure smooth transition between spans.

Watertight Integrity Test

- Upon completion of an expansion joint seal, perform a water test on the top surface to detect any leakage. Cover the roadway section of the joint from curb to curb, or barrier rail to barrier rail, with water, either ponded or flowing, not less than 1 inch above the roadway surface at all points. Block sidewalk sections and secure an unnozzled water hose delivering approximately 1 gallon of water per minute to the inside face of the bridge railing, trained in a downward position about 6 inches above the sidewalks, such that there is continuous flow of water across the sidewalk and down the curb face of the joint.
- Maintain the ponding or flowing of water on the roadway and continuous flow
 across sidewalks and curbs for a period of 5 hours. At the conclusion of the test,
 the underside of the joint is closely examined for leakage. The expansion joint seal
 is considered watertight if no obvious wetness is visible on the Engineer's finger
 after touching a number of underdeck areas. Damp concrete that does not impart
 wetness to the finger is not a sign of leakage.
- If the joint system leaks, locate the place(s) of leakage and take any repair measures necessary to stop the leakage at no additional cost to the Department. Use repair measures recommended by the manufacturer and approved by the Engineer prior to beginning corrective work.
- If measures to eliminate leakage are taken, perform a subsequent water integrity test subject to the same conditions as the original test. Subsequent tests carry the same responsibility as the original test and are performed at no extra cost to the Department.

6.0 BASIS OF PAYMENT

Basis of payment for all expansion joint seals will be at the lump sum contract price for "Expansion Joint Seals" which price and payment will be full compensation for furnishing all material, including any steel accessory plates for sidewalks, medians and rails, labor, tools, and incidentals necessary for installing the expansion joint seal in place and including all materials, labor, tools and incidentals for performing the original watertight integrity test.

FALSEWORK AND FORMWORK

(4-5-12)

1.0 DESCRIPTION

Use this Special Provision as a guide to develop temporary works submittals required by the Standard Specifications or other provisions; no additional submittals are required herein. Such temporary works include, but are not limited to, falsework and formwork.

Falsework is any temporary construction used to support the permanent structure until it becomes self-supporting. Formwork is the temporary structure or mold used to retain plastic or fluid concrete in its designated shape until it hardens. Access scaffolding is a temporary structure that functions as a work platform that supports construction personnel, materials, and tools, but is not intended to support the structure. Scaffolding systems that are used to temporarily support permanent structures (as opposed to functioning as work platforms) are considered to be falsework under the definitions given. Shoring is a component of falsework such as horizontal, vertical, or inclined support members. Where the term "temporary works" is used, it includes all of the temporary facilities used in bridge construction that do not become part of the permanent structure.

Design and construct safe and adequate temporary works that will support all loads imposed and provide the necessary rigidity to achieve the lines and grades shown on the plans in the final structure.

2.0 MATERIALS

Select materials suitable for temporary works; however, select materials that also ensure the safety and quality required by the design assumptions. The Engineer has authority to reject material on the basis of its condition, inappropriate use, safety, or nonconformance with the plans. Clearly identify allowable loads or stresses for all materials or manufactured devices on the plans. Revise the plan and notify the Engineer if any change to materials or material strengths is required.

3.0 DESIGN REQUIREMENTS

A. Working Drawings

Provide working drawings for items as specified in the contract, or as required by the Engineer, with design calculations and supporting data in sufficient detail to permit a structural and safety review of the proposed design of the temporary work.

On the drawings, show all information necessary to allow the design of any component to be checked independently as determined by the Engineer.

When concrete placement is involved, include data such as the drawings of proposed sequence, rate of placement, direction of placement, and location of all construction joints. Submit the number of copies as called for by the contract.

When required, have the drawings and calculations prepared under the guidance of, and sealed by, a North Carolina Registered Professional Engineer who is knowledgeable in temporary works design.

If requested by the Engineer, submit with the working drawings manufacturer's catalog data listing the weight of all construction equipment that will be supported on the temporary work. Show anticipated total settlements and/or deflections of falsework and forms on the working drawings. Include falsework footing settlements, joint take-up, and deflection of beams or girders.

As an option for the Contractor, overhang falsework hangers may be uniformly spaced, at a maximum of 36 inches, provided the following conditions are met:

| Member Type (PCG) | Member Depth, (inches) | Max. Overhang Width, (inches) | Max. Slab Edge Thickness, (inches) | Max. Screed Wheel Weight, (lbs.) | Bracket Min. Vertical Leg Extension, (inches) |
|-------------------------|------------------------------|-------------------------------------|--|--|--|
| II | 36 | 39 | 14 | 2000 | 26 |
| III | 45 | 42 | 14 | 2000 | 35 |
| IV | 54 | 45 | 14 | 2000 | 44 |
| MBT | 63 | 51 | 12 | 2000 | 50 |
| MBT | 72 | 55 | 12 | 1700 | 48 |

Overhang width is measured from the centerline of the girder to the edge of the deck slab.

For Type II, III & IV prestressed concrete girders (PCG), 45-degree cast-in-place half hangers and rods must have a minimum safe working load of 6,000 lbs.

For MBT prestressed concrete girders, 45-degree angle holes for falsework hanger rods shall be cast through the girder top flange and located, measuring along the top of the member, 1'-2½" from the edge of the top flange. Hanger hardware and rods must have a minimum safe working load of 6,000 lbs.

The overhang bracket provided for the diagonal leg shall have a minimum safe working load of 3,750 lbs. The vertical leg of the bracket shall extend to the point that the heel bears on the girder bottom flange, no closer than 4 inches from the bottom of the member. However, for 72-inch members, the heel of the bracket shall bear on the web, near the bottom flange transition.

Provide adequate overhang falsework and determine the appropriate adjustments for deck geometry, equipment, casting procedures and casting conditions.

If the optional overhang falsework spacing is used, indicate this on the falsework submittal and advise the girder producer of the proposed details. Failure to notify the Engineer of hanger type and hanger spacing on prestressed concrete girder casting drawings may delay the approval of those drawings.

Falsework hangers that support concentrated loads and are installed at the edge of thin top flange concrete girders (such as bulb tee girders) shall be spaced so as not to exceed 75% of the manufacturer's stated safe working load. Use of dual leg hangers (such as Meadow Burke HF-42 and HF-43) are not allowed on concrete girders with thin top flanges. Design the falsework and forms supporting deck slabs and overhangs on girder bridges so that there will be no differential settlement between the girders and the deck forms during placement of deck concrete.

When staged construction of the bridge deck is required, detail falsework and forms for screed and fluid concrete loads to be independent of any previous deck pour components when the mid-span girder deflection due to deck weight is greater than 3/4".

Note on the working drawings any anchorages, connectors, inserts, steel sleeves or other such devices used as part of the falsework or formwork that remains in the permanent structure. If the plan notes indicate that the structure contains the necessary corrosion protection required for a Corrosive Site, epoxy coat, galvanize or metalize these devices. Electroplating will not be allowed. Any coating required by the Engineer will be considered incidental to the various pay items requiring temporary works.

Design falsework and formwork requiring submittals in accordance with the 1995 AASHTO *Guide Design Specifications for Bridge Temporary Works* except as noted herein.

1. Wind Loads

Table 2.2 of Article 2.2.5.1 is modified to include wind velocities up to 110 mph. In addition, Table 2.2A is included to provide the maximum wind speeds by county in North Carolina.

Pressure, lb/ft² for Indicated Wind Velocity, mph Height Zone feet above ground 70 80 90 100 110 0 to 30 20 25 35 15 30 30 to 50 20 25 30 35 40 50 to 100 30 25 35 40 45 30 35 40 45 50 over 100

Table 2.2 - Wind Pressure Values

2. Time of Removal

The following requirements replace those of Article 3.4.8.2.

Do not remove forms until the concrete has attained strengths required in Article 420-16 of the Standard Specifications and these Special Provisions.

Do not remove forms until the concrete has sufficient strength to prevent damage to the surface.

Table 2.2A - Steady State Maximum Wind Speeds by Counties in North Carolina

| COUNTY | 25 YR (mph) | COUNTY | 25 YR (mph) | COUNTY | 25 YR (mph) |
|------------|-------------|-------------|-------------|--------------|-------------|
| Alamance | 70 | Franklin | 70 | Pamlico | 100 |
| Alexander | 70 | Gaston | 70 | Pasquotank | 100 |
| Alleghany | 70 | Gates | 90 | Pender | 100 |
| Anson | 70 | Graham | 80 | Perquimans | 100 |
| Ashe | 70 | Granville | 70 | Person | 70 |
| Avery | 70 | Greene | 80 | Pitt | 90 |
| Beaufort | 100 | Guilford | 70 | Polk | 80 |
| Bertie | 90 | Halifax | 80 | Randolph | 70 |
| Bladen | 90 | Harnett | 70 | Richmond | 70 |
| Brunswick | 100 | Haywood | 80 | Robeson | 80 |
| Buncombe | 80 | Henderson | 80 | Rockingham | 70 |
| Burke | 70 | Hertford | 90 | Rowan | 70 |
| Cabarrus | 70 | Hoke | 70 | Rutherford | 70 |
| Caldwell | 70 | Hyde | 110 | Sampson | 90 |
| Camden | 100 | Iredell | 70 | Scotland | 70 |
| Carteret | 110 | Jackson | 80 | Stanley | 70 |
| Caswell | 70 | Johnston | 80 | Stokes | 70 |
| Catawba | 70 | Jones | 100 | Surry | 70 |
| Cherokee | 80 | Lee | 70 | Swain | 80 |
| Chatham | 70 | Lenoir | 90 | Transylvania | 80 |
| Chowan | 90 | Lincoln | 70 | Tyrell | 100 |
| Clay | 80 | Macon | 80 | Union | 70 |
| Cleveland | 70 | Madison | 80 | Vance | 70 |
| Columbus | 90 | Martin | 90 | Wake | 70 |
| Craven | 100 | McDowell | 70 | Warren | 70 |
| Cumberland | 80 | Mecklenburg | 70 | Washington | 100 |
| Currituck | 100 | Mitchell | 70 | Watauga | 70 |
| Dare | 110 | Montgomery | 70 | Wayne | 80 |
| Davidson | 70 | Moore | 70 | Wilkes | 70 |
| Davie | 70 | Nash | 80 | Wilson | 80 |
| Duplin | 90 | New Hanover | 100 | Yadkin | 70 |
| Durham | 70 | Northampton | 80 | Yancey | 70 |
| Edgecombe | 80 | Onslow | 100 | | |
| Forsyth | 70 | Orange | 70 | | |

B. Review and Approval

The Engineer is responsible for the review and approval of temporary works' drawings.

Submit the working drawings sufficiently in advance of proposed use to allow for their review, revision (if needed), and approval without delay to the work.

The time period for review of the working drawings does not begin until complete drawings and design calculations, when required, are received by the Engineer.

Do not start construction of any temporary work for which working drawings are required until the drawings have been approved. Such approval does not relieve the Contractor of the responsibility for the accuracy and adequacy of the working drawings.

4.0 CONSTRUCTION REQUIREMENTS

All requirements of Section 420 of the Standard Specifications apply.

Construct temporary works in conformance with the approved working drawings. Ensure that the quality of materials and workmanship employed is consistent with that assumed in the design of the temporary works. Do not weld falsework members to any portion of the permanent structure unless approved. Show any welding to the permanent structure on the approved construction drawings.

Provide tell-tales attached to the forms and extending to the ground, or other means, for accurate measurement of falsework settlement. Make sure that the anticipated compressive settlement and/or deflection of falsework does not exceed 1 inch. For cast-in-place concrete structures, make sure that the calculated deflection of falsework flexural members does not exceed 1/240 of their span regardless of whether or not the deflection is compensated by camber strips.

A. Maintenance and Inspection

Inspect and maintain the temporary work in an acceptable condition throughout the period of its use. Certify that the manufactured devices have been maintained in a condition to allow them to safely carry their rated loads. Clearly mark each piece so that its capacity can be readily determined at the job site.

Perform an in-depth inspection of an applicable portion(s) of the temporary works, in the presence of the Engineer, not more than 24 hours prior to the beginning of each concrete placement. Inspect other temporary works at least once a month to ensure that they are functioning properly. Have a North Carolina Registered Professional Engineer inspect the cofferdams, shoring, sheathing, support of excavation structures, and support systems for load tests prior to loading.

B. Foundations

Determine the safe bearing capacity of the foundation material on which the supports for temporary works rest. If required by the Engineer, conduct load tests to verify proposed bearing capacity values that are marginal or in other high-risk situations.

The use of the foundation support values shown on the contract plans of the permanent structure is permitted if the foundations are on the same level and on the same soil as those of the permanent structure.

Allow for adequate site drainage or soil protection to prevent soil saturation and washout of the soil supporting the temporary works supports.

If piles are used, the estimation of capacities and later confirmation during construction using standard procedures based on the driving characteristics of the pile is permitted. If preferred, use load tests to confirm the estimated capacities; or, if required by the Engineer conduct load tests to verify bearing capacity values that are marginal or in other high risk situations.

The Engineer reviews and approves the proposed pile and soil bearing capacities.

5.0 REMOVAL

Unless otherwise permitted, remove and keep all temporary works upon completion of the work. Do not disturb or otherwise damage the finished work.

Remove temporary works in conformance with the contract documents. Remove them in such a manner as to permit the structure to uniformly and gradually take the stresses due to its own weight.

6.0 METHOD OF MEASUREMENT

Unless otherwise specified, temporary works will not be directly measured.

7.0 BASIS OF PAYMENT

Payment at the contract unit prices for the various pay items requiring temporary works will be full compensation for the above falsework and formwork.

SUBMITTAL OF WORKING DRAWINGS

(6-19-15)

1.0 GENERAL

Submit working drawings in accordance with Article 105-2 of the *Standard Specifications* and this provision. For this provision, "submittals" refers to only those listed in this provision. The list of submittals contained herein does not represent a list of required submittals for the project. Submittals are only necessary for those items as required by the contract. Make submittals that are not specifically noted in this provision directly to the Engineer. Either the Structures Management Unit or the Geotechnical Engineering Unit or both units will jointly review submittals.

If a submittal contains variations from plan details or specifications or significantly affects project cost, field construction or operations, discuss the submittal with and submit all copies to the Engineer. State the reason for the proposed variation in the submittal. To minimize review time, make sure all submittals are complete when initially submitted. Provide a contact name and information with each submittal. Direct any questions regarding submittal requirements to the Engineer, Structures Management Unit contacts or the Geotechnical Engineering Unit contacts noted below.

In order to facilitate in-plant inspection by NCDOT and approval of working drawings, provide the name, address and telephone number of the facility where fabrication will actually be done if different than shown on the title block of the submitted working drawings. This includes, but is not limited to, precast concrete items, prestressed concrete items and fabricated steel or aluminum items.

2.0 ADDRESSES AND CONTACTS

For submittals to the Structures Management Unit, use the following addresses:

Via US mail:

Via other delivery service:

Mr. T. K. Koch, P. E. State Structures Engineer North Carolina Department of Transportation Structures Management Unit 1581 Mail Service Center Raleigh, NC 27699-1581 Mr. T. K. Koch, P. E. State Structures Engineer North Carolina Department of Transportation Structures Management Unit 1000 Birch Ridge Drive Raleigh, NC 27610

Attention: Mr. P. D. Lambert, P. E. Attention: Mr. P. D. Lambert, P. E.

Submittals may also be made via email. Send submittals to:

plambert@ncdot.gov (Paul Lambert)

Send an additional e-copy of the submittal to the following addresses:

<u>igaither@ncdot.ov</u> (James Gaither) <u>mrorie@ncdot.gov</u> (Madonna Rorie)

For submittals to the Geotechnical Engineering Unit, use the following addresses:

For projects in Divisions 1-7, use the following Eastern Regional Office address:

Via US mail: Via other delivery service:

Mr. K. J. Kim, Ph. D., P. E.
Eastern Regional Geotechnical

Mr. K. J. Kim, Ph. D., P. E.
Eastern Regional Geotechnical

Manager Manager

North Carolina Department of North Carolina Department of

Transportation Transportation

Geotechnical Engineering Unit - Geotechnical Engineering Unit -

Eastern Regional Office Eastern Regional Office

1570 Mail Service Center 3301 Jones Sausage Road, Suite 100

Raleigh, NC 27699-1570 Garner, NC 27529

For projects in Divisions 8-14, use the following Western Regional Office address:

Via US mail: Via other delivery service:

Mr. Eric Williams, P. E. Mr. Eric Williams, P. E.

Western Regional Geotechnical Western Regional Geotechnical

Manager Manager

North Carolina Department of North Carolina Department of

Transportation Transportation

Geotechnical Engineering Unit - Geotechnical Engineering Unit -

Western Regional Office
5253 Z Max Boulevard
5253 Z Max Boulevard
Harrisburg, NC 28075
Western Regional Office
5253 Z Max Boulevard
Harrisburg, NC 28075

The status of the review of structure-related submittals sent to the Structures Management Unit can be viewed from the Unit's web site, via the "Drawing Submittal Status" link.

Direct any questions concerning submittal review status, review comments or drawing markups to the following contacts:

Primary Structures Contact: Paul Lambert (919) 707–6407

(919) 250–4082 facsimile

Secondary Structures Contacts: James Gaither (919) 707–6409

Madonna Rorie (919) 707–6508

Eastern Regional Geotechnical Contact (Divisions 1-7):

K. J. Kim (919) 662–4710

(919) 662–3095 facsimile kkim@ncdot.gov

Western Regional Geotechnical Contact (Divisions 8-14):

Eric Williams (704) 455–8902 (704) 455–8912 facsimile ewilliams3@ncdot.gov

3.0 SUBMITTAL COPIES

Furnish one complete copy of each submittal, including all attachments, to the Engineer. At the same time, submit the number of hard copies shown below of the same complete submittal directly to the Structures Management Unit and/or the Geotechnical Engineering Unit.

The first table below covers "Structure Submittals". The Engineer will receive review comments and drawing markups for these submittals from the Structures Management Unit. The second table in this section covers "Geotechnical Submittals". The Engineer will receive review comments and drawing markups for these submittals from the Geotechnical Engineering Unit.

Unless otherwise required, submit one set of supporting calculations to either the Structures Management Unit or the Geotechnical Engineering Unit unless both units require submittal copies in which case submit a set of supporting calculations to each unit. Provide additional copies of any submittal as directed.

STRUCTURE SUBMITTALS

| Submittal | Copies Required by Structures Management Unit | Copies Required by Geotechnical Engineering Unit | Contract Reference Requiring Submittal ¹ |
|--|---|---|--|
| Arch Culvert Falsework | 5 | 0 | Plan Note, SN Sheet & "Falsework and Formwork" |
| Box Culvert Falsework ⁷ | 5 | 0 | Plan Note, SN Sheet & "Falsework and Formwork" |
| Cofferdams | 6 | 2 | Article 410-4 |
| Foam Joint Seals ⁶ | 9 | 0 | "Foam Joint Seals" |
| Expansion Joint Seals (hold down plate type with | 9 | 0 | "Expansion Joint Seals" |

STRUCTURE SUBMITTALS

| Submittal | Copies Required by Structures Management Unit | Copies Required by Geotechnical Engineering Unit | Contract Reference Requiring Submittal ¹ |
|--|---|---|--|
| base angle) | | | |
| Expansion Joint Seals (modular) | 2, then 9 | 0 | "Modular Expansion Joint Seals" |
| Expansion Joint Seals (strip seals) | 9 | 0 | "Strip Seals" |
| Falsework & Forms ² (substructure) | 8 | 0 | Article 420-3 & "Falsework and Formwork" |
| Falsework & Forms (superstructure) | 8 | 0 | Article 420-3 & "Falsework and Formwork" |
| Girder Erection over Railroad | 5 | 0 | Railroad Provisions |
| Maintenance and Protection of Traffic Beneath Proposed Structure | 8 | 0 | "Maintenance and Protection of Traffic Beneath Proposed Structure at Station" |
| Metal Bridge Railing | 8 | 0 | Plan Note |
| Metal Stay-in-Place Forms | 8 | 0 | Article 420-3 |
| Metalwork for Elastomeric Bearings ^{4,5} | 7 | 0 | Article 1072-8 |
| Miscellaneous Metalwork ^{4,5} | 7 | 0 | Article 1072-8 |
| Disc Bearings ⁴ | 8 | 0 | "Disc Bearings" |
| Overhead and Digital Message Signs (DMS) (metalwork and foundations) | 13 | 0 | Applicable Provisions |
| Placement of Equipment on Structures (cranes, etc.) | 7 | 0 | Article 420-20 |
| Precast Concrete Box Culverts | 2, then 1 reproducible | 0 | "Optional Precast Reinforced Concrete Box Culvert at Station" |
| Prestressed Concrete | 6 | 0 | Article 1078-11 |

STRUCTURE SUBMITTALS

| Submittal | Copies Required by Structures Management Unit | Copies Required by Geotechnical Engineering Unit | Contract Reference Requiring Submittal ¹ |
|---|---|---|---|
| Cored Slab (detensioning sequences) ³ | | | |
| Prestressed Concrete Deck Panels | 6 and 1 reproducible | 0 | Article 420-3 |
| Prestressed Concrete Girder (strand elongation and detensioning sequences) | 6 | 0 | Articles 1078-8 and 1078-11 |
| Removal of Existing Structure over Railroad | 5 | 0 | Railroad Provisions |
| Revised Bridge Deck Plans (adaptation to prestressed deck panels) | 2, then 1 reproducible | 0 | Article 420-3 |
| Revised Bridge Deck Plans (adaptation to modular expansion joint seals) | 2, then 1 reproducible | 0 | "Modular Expansion Joint Seals" |
| Sound Barrier Wall (precast items) | 10 | 0 | Article 1077-2 & "Sound Barrier Wall" |
| Sound Barrier Wall Steel Fabrication Plans ⁵ | 7 | 0 | Article 1072-8 & "Sound Barrier Wall" |
| Structural Steel ⁴ | 2, then 7 | 0 | Article 1072-8 |
| Temporary Detour Structures | 10 | 2 | Article 400-3 & "Construction, Maintenance and Removal of Temporary Structure at Station" |
| TFE Expansion Bearings ⁴ | 8 | 0 | Article 1072-8 |

FOOTNOTES

- 1. References are provided to help locate the part of the contract where the submittals are required. References in quotes refer to the provision by that name. Articles refer to the *Standard Specifications*.
- 2. Submittals for these items are necessary only when required by a note on plans.
- 3. Submittals for these items may not be required. A list of pre-approved sequences is available from the producer or the Materials & Tests Unit.
- 4. The fabricator may submit these items directly to the Structures Management Unit.
- 5. The two sets of preliminary submittals required by Article 1072-8 of the *Standard Specifications* are not required for these items.
- 6. Submittals for Fabrication Drawings are not required. Submittals for Catalogue Cuts of Proposed Material are required. See Section 5.A of the referenced provision.
- 7. Submittals are necessary only when the top slab thickness is 18" or greater.

GEOTECHNICAL SUBMITTALS

| Submittal | Copies Required by Geotechnical Engineering Unit | Copies Required by Structures Management Unit | Contract Reference Requiring Submittal ¹ |
|---|---|---|--|
| Drilled Pier Construction Plans ² | 1 | 0 | Subarticle 411-3(A) |
| Crosshole Sonic Logging (CSL) Reports ² | 1 | 0 | Subarticle 411-5(A)(2) |
| Pile Driving Equipment Data Forms ^{2,3} | 1 | 0 | Subarticle 450-3(D)(2) |
| Pile Driving Analyzer (PDA) Reports ² | 1 | 0 | Subarticle 450-3(F)(3) |
| Retaining Walls ⁴ | 8 drawings, 2 calculations | 2 drawings | Applicable Provisions |
| Temporary Shoring ⁴ | 5 drawings, 2 calculations | 2 drawings | "Temporary Shoring" & "Temporary Soil Nail Walls" |

FOOTNOTES

- 1. References are provided to help locate the part of the contract where the submittals are required. References in quotes refer to the provision by that name. Subarticles refer to the *Standard Specifications*.
- 2. Submit one hard copy of submittal to the Engineer. Submit a second copy of submittal electronically (PDF via email) or by facsimile, US mail or other delivery service to the appropriate Geotechnical Engineering Unit regional office. Electronic submission is preferred.
- The Pile Driving Equipment Data Form is available from: https://connect.ncdot.gov/resources/Geological/Pages/Geotech Forms Details.aspx
 See second page of form for submittal instructions.
- 4. Electronic copy of submittal is required. See referenced provision.

CRANE SAFETY (8-15-05)

Comply with the manufacturer specifications and limitations applicable to the operation of any and all cranes and derricks. Prime contractors, sub-contractors, and fully operated rental companies shall comply with the current Occupational Safety and Health Administration regulations (OSHA).

Submit all items listed below to the Engineer prior to beginning crane operations involving critical lifts. A critical lift is defined as any lift that exceeds 75 percent of the manufacturer's crane chart capacity for the radius at which the load will be lifted or requires the use of more than one crane. Changes in personnel or equipment must be reported to the Engineer and all applicable items listed below must be updated and submitted prior to continuing with crane operations.

CRANE SAFETY SUBMITTAL LIST

- A. <u>Competent Person:</u> Provide the name and qualifications of the "Competent Person" responsible for crane safety and lifting operations. The named competent person will have the responsibility and authority to stop any work activity due to safety concerns.
- B. <u>Riggers:</u> Provide the qualifications and experience of the persons responsible for rigging operations. Qualifications and experience should include, but not be limited to, weight calculations, center of gravity determinations, selection and inspection of sling and rigging equipment, and safe rigging practices.
- C. <u>Crane Inspections:</u> Inspection records for all cranes shall be current and readily accessible for review upon request.
- D. <u>Certifications:</u> By July 1, 2006, crane operators performing critical lifts shall be certified by NC CCO (National Commission for the Certification of Crane Operators), or satisfactorily complete the Carolinas AGC's Professional Crane Operator's

Proficiency Program. Other approved nationally accredited programs will be considered upon request. All crane operators shall also have a current CDL medical card. Submit a list of anticipated critical lifts and corresponding crane operator(s). Include current certification for the type of crane operated (small hydraulic, large hydraulic, small lattice, large lattice) and medical evaluations for each operator.

GROUT FOR STRUCTURES

(9-30-11)

1.0 DESCRIPTION

This special provision addresses grout for use in pile blockouts, grout pockets, shear keys, dowel holes and recesses for structures. This provision does not apply to grout placed in post-tensioning ducts for bridge beams, girders, or decks. Mix and place grout in accordance with the manufacturer's recommendations, the applicable sections of the Standard Specifications and this provision.

2.0 MATERIAL REQUIREMENTS

Use a Department approved pre-packaged, non-shrink, non-metallic grout. Contact the Materials and Tests Unit for a list of approved pre-packaged grouts and consult the manufacturer to determine if the pre-packaged grout selected is suitable for the required application.

When using an approved pre-packaged grout, a grout mix design submittal is not required.

The grout shall be free of soluble chlorides and contain less than one percent soluble sulfate. Supply water in compliance with Article 1024-4 of the Standard Specifications.

Aggregate may be added to the mix only where recommended or permitted by the manufacturer and Engineer. The quantity and gradation of the aggregate shall be in accordance with the manufacturer's recommendations.

Admixtures, if approved by the Department, shall be used in accordance with the manufacturer's recommendations. The manufacture date shall be clearly stamped on each container. Admixtures with an expired shelf life shall not be used.

The Engineer reserves the right to reject material based on unsatisfactory performance.

Initial setting time shall not be less than 10 minutes when tested in accordance with ASTM C266.

Test the expansion and shrinkage of the grout in accordance with ASTM C1090. The grout shall expand no more than 0.2% and shall exhibit no shrinkage. Furnish a Type 4 material certification showing results of tests conducted to determine the properties listed in the Standard Specifications and to assure the material is non-shrink.

Unless required elsewhere in the contract the compressive strength at 3 days shall be at least 5000 psi. Compressive strength in the laboratory shall be determined in accordance with ASTM C109 except the test mix shall contain only water and the dry manufactured material. Compressive strength in the field will be determined by molding and testing 4" x 8" cylinders in accordance with AASHTO T22. Construction loading and traffic loading shall not be allowed until the 3 day compressive strength is achieved.

When tested in accordance with ASTM C666, Procedure A, the durability factor of the grout shall not be less than 80.

3.0 SAMPLING AND PLACEMENT

Place and maintain components in final position until grout placement is complete and accepted. Concrete surfaces to receive grout shall be free of defective concrete, laitance, oil, grease and other foreign matter. Saturate concrete surfaces with clean water and remove excess water prior to placing grout.

Do not place grout if the grout temperature is less than 50°F or more than 90°F or if the air temperature measured at the location of the grouting operation in the shade away from artificial heat is below 45°F.

Provide grout at a rate that permits proper handling, placing and finishing in accordance with the manufacturer's recommendations unless directed otherwise by the Engineer. Use grout free of any lumps and undispersed cement. Agitate grout continuously before placement.

Control grout delivery so the interval between placing batches in the same component does not exceed 20 minutes.

The Engineer will determine the locations to sample grout and the number and type of samples collected for field and laboratory testing. The compressive strength of the grout will be considered the average compressive strength test results of 3 cube or 2 cylinder specimens at 28 days.

4.0 BASIS OF PAYMENT

No separate payment will be made for "Grout for Structures". The cost of the material, equipment, labor, placement, and any incidentals necessary to complete the work shall be considered incidental to the structure item requiring grout.

 $\underline{MASS CONCRETE} \tag{1/23/15}$

This special provision applies to substructure components (footings, columns or caps) when the smallest dimension of that component is between six feet and eight feet.

The mass concrete temperature after placement shall not exceed 158°F and the temperature difference between the core and exterior surfaces shall not exceed 35°F. Mass concrete should remain covered and monitored until the difference between the core temperature and the average daily ambient temperature is below 35°F. All mass concrete pours shall remain covered and protected a minimum of 7 days unless otherwise directed by the Engineer.

Submit an analysis, for review and approval, of the anticipated thermal developments in the mass concrete based on the proposed mix design, materials and casting procedures. At a minimum the analysis shall provide: an anticipated range of peak temperatures, temperature gradients, time to peak temperature and recommended cure time. The submittal shall also describe the measures and procedures that will be taken to limit the temperature differential to 35°F or less between the core and exterior surfaces.

Methods for reducing thermal differential may involve but are not limited to a combination of the following:

- A. Selecting materials that minimize the heat generated by hydration of the cement.
- B. Cooling materials to reduce the temperature of the concrete in its plastic state.
- C. Controlling the rate of concrete placement.
- D. Insulating the concrete surface to prevent heat loss.
- E. Providing supplemental heat at the concrete surface to prevent heat loss.
- F. Other acceptable methods which may be developed by the Contractor.

The temperature of mass concrete at the time of placement shall not be less than 40°F nor more than 75°F.

Mass concrete shall contain an approved set-retarding, water-reducing admixture, and flyash or ground granulated blast furnace slag in the amount of 25% by weight of the total cementitious material (portland cement plus flyash). Flyash or ground granulated blast furnace slag used in the mass concrete mix shall meet the requirements of Articles 1024-5 and 1024-6 of the Standard Specifications. Portland Cement shall meet the requirements of AASHTO M85 for Type II. The total cementitious material shall not exceed 600 lbs. per cubic yard of concrete. The Contractor shall test and submit results for the compressive strength of his proposed mix design for review and approval. The strength must be taken as the average of at least three cylinders made in the laboratory and meet the minimum 28 day strength requirements noted in the contract plans.

The Contractor shall provide and install a minimum of six temperature sensing devices in each mass concrete pour to monitor temperature differentials between the core and exterior surfaces. These devices shall have an accuracy of $\pm 2^{\circ}F$ within the temperature range of $40^{\circ}F$ to $180^{\circ}F$. One temperature sensing probe shall be placed near the core of the pour, and the remaining temperature sensing probes shall be placed at approximately two inches clear from the surface of the concrete furthest from the core. The Engineer shall approve the locations of the temperature sensing probes.

Readings from the temperature sensing devices shall be recorded at one-hour intervals, from the time casting is complete until the maximum temperature is established. After the maximum temperature is established, record readings from temperature sensing devices at two-hour intervals until consecutive readings indicated the temperature difference between the core and all exterior surfaces is less than 35°F. At the option of the Contractor, the temperature may be recorded by an approved strip-chart recorder furnished by the Contractor.

If monitoring indicates the 35°F differential has been exceeded, the Contractor shall take immediate action to reduce the temperature differential to less than 35°F and revise the thermal plan to ensure future mass concrete pours meet the temperature limits. All revisions to the approved plan must be approved by the Engineer prior to implementation.

At the discretion of the Engineer, all temperature monitoring requirements may be waived provided the Contractor has proven to the satisfaction of the Engineer that the temperature after placement will not exceed 158°F and the temperature difference between the core and all exterior surfaces will not exceed 35°F.

Placement of mass concrete shall be continuous resulting in a footing, column or cap that is monolithic and homogeneous.

The entire cost of this work shall be included in the unit contract price bid for the class of concrete associated with the mass concrete.

PROJECT SPECIAL PROVISION

(10-18-95) (Rev. 10-15-13)

<u>PERMITS RECEIVED</u>

The Contractor's attention is directed to the following permits, which have been issued to the Department of Transportation by the authority granting the permit.

| <u>PERMIT</u> | AUTHORITY GRANTING THE PERMIT |
|--|--|
| Dredge and Fill and/or Work in Navigable Waters (404) | U. S. Army Corps of Engineers |
| Water Quality (401) | Division of Environmental Management, NCDEQ State of North Carolina |
| Buffer Certification | Division of Environmental Management, NCDEQ State of North Carolina |

PERMITS APPLIED FOR

The Contractor's attention is directed to the following permit, which has been <u>applied</u> for by the Department of Transportation to the authority granting the permit. Copies of the permits will be furnished to the Contractor when received by the Department.

| <u>PERMIT</u> | AUTHORITY GRANTING THE PERMIT |
|---------------|------------------------------------|
| CCPCUA | Division of Water Resources, NCDEQ |
| | State of North Carolina |

The Contractor shall comply with all applicable permit conditions during construction of this project. Those conditions marked by * are the responsibility of the Department and the Contractor has no responsibility in accomplishing those conditions.

Agents of the permitting authority will periodically inspect the project for adherence to the permits.

The Contractor's attention is also directed to Articles 107-10 and 107-13 of the 2012 Standard Specifications and the following:

Should the Contractor propose to utilize construction methods (such as temporary structures or fill in waters and/or wetlands for haul roads, work platforms, cofferdams, etc.) not specifically identified in the permit (individual, general, or nationwide) authorizing the project it shall be the Contractor's responsibility to coordinate with the Engineer to determine what, if any, additional permit action is required. The Contractor shall also be responsible for initiating the request for the authorization of such construction method by the permitting agency. The request shall be submitted through the Engineer. The Contractor shall not utilize the construction method until it is approved by the permitting agency. The request normally takes approximately 60 days to process; however, no extensions of time or additional compensation will be granted for delays resulting from the Contractor's request for approval of construction methods not specifically identified in the permit.

Where construction moratoriums are contained in a permit condition which restricts the Contractor's activities to certain times of the year, those moratoriums will apply only to the portions of the work taking place in the waters or wetlands provided that activities outside those areas is done in such a manner as to not affect the waters or wetlands.

Z-1

P-2

U.S. ARMY CORPS OF ENGINEERS

WILMINGTON DISTRICT

Action Id. SAW-2017-00827 County: Craven U.S.G.S. Quad: NC-HAVELOCK

GENERAL PERMIT (REGIONAL AND NATIONWIDE) VERIFICATION

Permittee: NC DOT PDEA Phillip Harris

Address: <u>1598 Mail Service Center</u>

Raleigh, NC, 27699-1598

Telephone Number:

Size (acres) 4.7 Nearest Town Nearest Waterway Sandy Run River Basin Neuse

USGS HUC <u>03020204</u> Coordinates Latitude: <u>34.9172769748773</u>

Longitude: <u>-76.9392340344435</u>

Location description: <u>Intersection of Slocum Road and US 70 at Cherry Point MCAS in Havelock, Craven County, North</u>

Carolina.

Description of projects area and activity: Applicant proposes to construct grade separation on SR 1130 and interchange at Old NC 11/SR 1213 at the intersection with US 70 near the access of Slocum Gate on Cherry Point MCAS. This verification utilizes four RGP-31 permits (A-D) for different single and complete projects within the overall project area. A-applies to Site 1; B-applies to Sites 2 and 3; C-applies to Sites 4 and 5; and D-applies to Sites 6 and 7. Total permanent impacts of 1.26 acres of riparian wetlands, 1054 ln ft. of streams and 0.17 acres of surface waters and temporary impacts of 273 ln ft of stream and 0.06 acres of surface water are authorized by this verification.

Applicable Law: Section 404 (Clean Water Act, 33 USC 1344)

Sections 10 (Rivers and Harbors Act, 33 USC 403)

Authorization: Regional General Permit Number or Nationwide Permit Number: GP 198200031 NCDOT Bridges, Widening

Projects.... (Authorized 2015)

SEE ATTACHED RGP or NWP GENERAL, REGIONAL AND SPECIAL CONDITIONS

Your work is authorized by the above referenced permit provided it is accomplished in strict accordance with the attached conditions and your submitted application and attached information dated <u>03/10/2017</u>. Any violation of the attached conditions or deviation from your submitted plans may subject the permittee to a stop work order, a restoration order, a Class I administrative penalty, and/or appropriate legal action.

This verification will remain valid until the expiration date identified below unless the nationwide authorization is modified, suspended or revoked. If, prior to the expiration date identified below, the nationwide permit authorization is reissued and/or modified, this verification will remain valid until the expiration date identified below, provided it complies with all requirements of the modified nationwide permit. If the nationwide permit authorization expires or is suspended, revoked, or is modified, such that the activity would no longer comply with the terms and conditions of the nationwide permit, activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon the nationwide permit, will remain authorized provided the activity is completed within twelve months of the date of the nationwide permit's expiration, modification or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend or revoke the authorization.

Activities subject to Section 404 (as indicated above) may also require an individual Section 401 Water Quality Certification. You should contact the NC Division of Water Resources (telephone 919-807-6300) to determine Section 401 requirements.

For activities occurring within the twenty coastal counties subject to regulation under the Coastal Area Management Act (CAMA), prior to beginning work you must contact the N.C. Division of Coastal Management in Morehead City, NC, at (252) 808-2808.

This Department of the Army verification does not relieve the permittee of the responsibility to obtain any other required Federal, State or local approvals/permits.

If there are any questions regarding this verification, any of the conditions of the Permit, or the Corps of Engineers regulatory program, please contact **Thomas Steffens at (910) 251-4615 or Thomas.A.Steffens@usace.army.mil**.

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Corps Regulatory Official:84706273 cn=STEFF9\s7#00\AA\\A\\Corps\Text{15\cdots}\Text{20170}\Text{15\cdots}\Text{20170}\Text{201

Expiration Date of Verification: 04/30/2020

Determination of Jurisdiction:

| A. There are waters, including wetlands, on the above described project area that may be subject to Section 404 of the Cle Water Act (CWA) (33 USC § 1344) and/or Section 10 of the Rivers and Harbors Act (RHA) (33 USC § 403). This prelimi determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFF 331). However, you may request an approved JD, which is an appealable action, by contacting the Corps district for further instruction. Please note, if work is authorized by either a general or nationwide permit, and you wish to request an appeal approved JD, the appeal must be received by the Corps and the appeal process concluded prior to the commencement of an in waters of the United States and prior to any work that could alter the hydrology of waters of the United States. | nary R Part er of an |
|---|-------------------------------|
| B. There are Navigable Waters of the United States within the above described project area subject to the permit requirement Section 10 of the Rivers and Harbors Act (RHA) (33 USC § 403) and Section 404 of the Clean Water Act (CWA) (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period exceed five years from the date of this notification. | C § |
| C. There are waters, including wetlands, within the above described project area that are subject to the permit requirement Section 404 of the Clean Water Act (CWA) (33 USC § 1344). Unless there is a change in the law or our published regulations this determination may be relied upon for a period not to exceed five years from the date of this notification. | |
| D. The jurisdictional areas within the above described project area have been identified under a previous action. Please refigurisdictional determination issued . Action ID: SAW- . | erence |
| Basis For Determination: a. This waterbody exhibits an Ordinary High Water Mark as indicated by change soil character and absence of terrestrial vegetation and is hydrologically connected to the Neuse River, a TNW. These site exhibits wetland criteria as described in the 1987 Corps Wetland Delineation Manual and Regional Supplement and are adjacent to or abutting Sandy Run, a UT to Sandy Run and/or Tucker Creek, all direct tributaries of the Neuse River, a | tes also |
| E. Attention USDA Program Participants | |
| This delineation/determination has been conducted to identify the limits of Corps' Clean Water Act jurisdiction for the particular identified in this request. The delineation/determination may not be valid for the wetland conservation provisions of the Food Stact of 1985. If you or your tenant are USDA Program participants, or anticipate participation in USDA programs, you should a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work. | Security |
| F. Appeals Information (This information applies only to approved jurisdiction determinations as indicated in C above). | ı B and |
| This correspondence constitutes an approved jurisdiction determination for the above described site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this determination must submit a completed RFA form to the following address: | |
| US Army Corps of Engineers South Atlantic Division Attn: Jason Steele, Review Officer 60 Forsyth Street SW, Room 10M15 Atlanta, Georgia 30303-8801 Phone: (404) 562-5137 | |
| In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for apperunder 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this corresponde | ou |
| Corps Regulatory Official: STEFFENS.THOMAS.ANCRUM.128470627 Corps Regulatory Official: STEFFENS.THOMAS.ANCRUM.1284706273 Digitally signed by STEFFENS.THOMAS.ANCRUM.1284706273 Dist. C=US, 0=US. Government, ou=DoD, ou=PKI, ou=USA, ou=STEFFENS.THOMAS.ANCRUM.1284706273 Date: 2017.04.27 15:26:04-04'00' Date: 2017.04.27 15:26:04-04'00' | |
| Thomas Stattons | |

Date of JD: 04/27/2017

Thomas Steffens

SPECIAL CONDITIONS

INSTALLATION OF CULVERTS: For construction of culverts, measures will be included in the construction that will promote the safe passage of fish and other aquatic organisms. For all culvert construction activities, the dimension, pattern, and profile of the stream, (above and below a pipe or culvert), should not be modified by widening the stream channel or by reducing the depth of the stream. Culvert inverts will be buried at least one foot below the bed of the stream for culverts greater than 48 inches in diameter. For culverts 48 inches in diameter or smaller, culverts must be buried below the bed of the stream to a depth equal to or greater than 20 percent of the diameter of the culvert.

EROSION CONTROL MEASURES IN WETLANDS: The permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades in those areas, prior to project completion.

SILT-FENCING: The permittee shall employ all sedimentation and erosion control measures necessary to prevent an increase in sedimentation or turbidity within waters and wetlands outside the permit area. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).

MAINTAIN CIRCULATION AND FLOW OF WATERS: Except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters or wetlands.

* CONSTRUCTION PLANS: The permittee will ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Written verification shall be provided that the final construction drawings comply with the attached permit drawings prior to any active construction in waters of the United States, including wetlands. Any deviation in the construction design plans will be brought to the attention of the Corps of Engineers, Washington Regulatory Field Office prior to any active construction in waters or wetlands.

TEMPORARY FILLS: Temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The affected areas must be revegetated, as appropriate.

BORROW AND FILL: To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent wetlands and streams, except as authorized by this permit, the permittee shall require its contractors and/or agents to identify all areas to be used to borrow material, or to dispose of dredged, fill, or waste material. The permittee shall provide the USACE with appropriate maps indicating the locations of proposed borrow or waste sites as soon as the permittee has that information. The permittee will coordinate with the USACE before approving any borrow or waste sites that are within 400 feet of any streams or wetlands.

* MITIGATION: In order to compensate for impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit authorization.

In order to offset unavoidable Riparian Wetland Impacts for R-5516, the Three Swamp Site will be debited 1.26 acres of Riparian Wetland Mitigation. The Three Swamp Mitigation Site is located in Pamlico and Craven County within the USGS hydrologic unit 03020204 of the Neuse River. NCDOT acquired the 3.90 acre site to mitigate for unavoidable, jurisdictional impacts associated with TIP R-2539A/B. Monitoring requirements were performed from 2007 to 2012 and the site was closed out in 2013. The site has been placed on the NCDOT On-site Debit Ledger for use within HUC 03020204.

| Action ID Number: SAW-2017-00 | 827 County: <u>Craven</u> |
|--|---|
| Permittee: NC DOT PDEA Phillip Harris | |
| Project Name: NCDOT R-5516 US7 | 0 Slocum Road Cherry Point MCAS |
| Date Verification Issued: April 27, 2017 | |
| | FFENS.THOMAS.ANCR Digitally signed by STEFFENS.THOMAS.ANCRUM.1284706273 DN: c=US, Government, ou=DoD, ou=PKI, ou=USA, on=STEFFENS.THOMAS.ANCRUM.1284706273 Date: 2017.04.27 15:25:35-04007 |
| Upon completion of the activity authorized sign this certification and return it to the fe | l by this permit and any mitigation required by the permit, ollowing address: |
| WII A Washin | IY CORPS OF ENGINEERS LMINGTON DISTRICT Attn: Thomas Steffens gton Regulatory Field Office 2407 West 5th Street shington, North Carolina 27889 |
| Engineers representative. Failure to comp | subject to a compliance inspection by a U. S. Army Corps of oly with any terms or conditions of this authorization may or revoking the authorization and/or issuing a Class I appropriate legal action. |
| · · | by the above referenced permit has been completed in of the said permit, and required mitigation was completed in |
| | |
| | |
| | |
| Signature of Permittee | Date |

DEPARTMENT OF THE ARMY
Wilmington District, Corps of Engineers
69 Darlington Avenue
Wilmington, North Carolina 28403-1343
April 30, 2015

Regional General Permit No. 198200031

Name of Permittee: North Carolina Department of Transportation

Effective Date: <u>April 30, 2015</u> Expiration Date: <u>April 30, 2020</u>

DEPARTMENT OF THE ARMY REGIONAL GENERAL PERMIT

A regional general permit (RGP) to perform work in or affecting navigable waters of the United States and waters of the United States, upon recommendation of the Chief of Engineers, pursuant to Section 10 of the Rivers and Harbors Act of March 3, 1899 (33 U.S.C. 403), and Section 404 of the Clean Water Act (33 U.S.C. 1344), is hereby modified and re-issued by authority of the Secretary of the Army by the

District Commander U.S. Army Engineer District, Wilmington Corps of Engineers 69 Darlington Avenue Wilmington, North Carolina 28403-1343

TO AUTHORIZE THE DISCHARGE OF DREDGED OR FILL MATERIAL IN WATERS OF THE UNITED STATES (U.S.), INCLUDING WETLANDS, ASSOCIATED WITH MAINTENANCE, REPAIR, AND CONSTRUCTION PROJECTS CONDUCTED BY THE VARIOUS DIVISIONS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) INCLUDING THE NCDOT DIVISION OF HIGHWAYS, RAIL, BICYCLE/PEDESTRIAN, ECT.

Activities authorized are:

- a. Construction, maintenance, and repair of bridges, to include work on the approaches, where permanent impacts resulting in a loss of waters of the U.S. will be less than or equal to 500 linear feet (If) of stream and/or one (1) acre of wetland/non-tidal open water for each single and complete linear project*.
- b. Best-fit widening projects that have undergone interagency review and completed the current interagency Merger Process, which merges the requirements of the National Environmental Policy Act (NEPA) with those found within Section 404 of the Clean Water Act (CWA).

While there is no impact threshold for these widening projects, the Corps has the discretion to require an individual permit if it determines that the proposed impacts will have more than a minimal impact on the aquatic environment or on other environmental factors, or if the project would normally require an Environmental Impact Statement (EIS) under current Federal Highway Administration (FHWA) guidelines. Best-fit projects may include a small amount of new location roadway for components such as interchanges or intersections, provided the new location portion has been concurred upon by the merger team.

- c. Minor widening projects, such as paving and/or widening secondary roads, or interchange improvements, when permanent impacts which result in a loss of waters of the U.S. from installation and/or extension of culverts and/or pipes will be less than or equal to 500 lf of stream and/or one (1) acre of wetland/non-tidal open water for each single and complete linear project.
- d. Stream relocation(s) associated with projects identified in a-c above. Stream relocation lengths are to be evaluated independently and are not included within each respective maximum limit threshold for the authorized actions stated above.

*Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the U.S. (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of this RGP. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Generally, off-site detours are preferred to avoid and minimize impacts to the human and natural environment. However, if an off-site detour is considered impracticable, then an on-site detour may be considered as a necessary component of the actions described above. Impacts from the detour may be considered temporary and may not require compensatory mitigation if the impacted area is restored to its pre-project condition after construction is complete. If the construction of a detour (on-site or off-site) includes standard undercutting methods, removal of all material and backfilling with suitable material is required.

1. Special Conditions.

- a. The applicant must submit a pre-construction notification (PCN) with specified attachments to the District Engineer and receive written verification from the Corps that the proposed work complies with this RGP prior to commencing any activity authorized by this RGP.
- b. If the project will not impact a designated "Area of Environmental Concern" (AEC) in the twenty (20) counties of North Carolina covered by the North Carolina Coastal Area Management Act (CAMA), then a consistency submission is not required. If the project will impact a designated AEC and meets the definition of "development", then the applicant must

obtain the required CAMA permit. Development activities may not commence until a copy of the approved CAMA permit is furnished to the appropriate Wilmington District Regulatory Field Office (Wilmington Field Office – 69 Darlington Avenue, Wilmington, NC 28403 or Washington Field Office – 2407 West 5th Street, Washington, NC 27889).

The twenty (20) CAMA counties in North Carolina include Beaufort, Bertie, Brunswick, Camden, Carteret, Chowan, Craven, Currituck, Dare, Gates, Hertford, Hyde, New Hanover, Onslow, Pamlico, Pasquotank, Pender, Perquimans, Tyrrell, and Washington.

c. Discharges into Waters of the U.S. designated by either the North Carolina Division of Marine Fisheries (NCDMF) or the North Carolina Wildlife Resources Commission (NCWRC) as anadromous fish spawning areas are prohibited during the period between February 1 and June 30, without prior written approval from NCDMF, NCWRC, National Marine Fisheries Service (NMFS), and the Corps. Discharges into waters of the U.S. designated by NCDMF as primary nursery areas and discharges into waters of the U.S. designated by NCWRC as primary nursery areas in inland waters shall be coordinated with NCDCM (per existing agreement with NCDMF) and NCWRC prior to being authorized by this RGP. Coordination with NCDCM and NCWRC may result in a required construction moratorium during periods of significant biological productivity or critical life stages.

The applicant should contact:

NC Division of Marine Fisheries 3441 Arendell Street Morehead City, NC 28557 Telephone 252-726-7021 or 800-682-2632 North Carolina Wildlife Resources Commission Habitat Conservation Program Manager 1721 Mail Service Center Raleigh, NC 27699-1721 Telephone (919) 733-7638

- d. This permit does not authorize the use of culverts in areas designated as anadromous fish spawning areas by the NCDMF or the NCWRC.
- e. Waters of the U.S. designated as sturgeon spawning areas are excluded during the period between February 1 and June 30, without prior written approval from NMFS.
- f. If the project is located within the twenty (20) counties of North Carolina designated as coastal counties by CAMA, then all pipe and culvert inverts will be buried at least one foot below normal bed elevation when they are placed within the Public Trust AEC and/or the Estuarine Waters AEC as designated by CAMA. If the project is not located within the twenty (20) counties of North Carolina designated as coastal counties by CAMA, then culvert inverts will be buried at least one foot below the bed of the stream for culverts greater than 48 inches in diameter. Culverts 48 inches in diameter or less shall be buried or placed on the stream bed as practicable and appropriate to maintain aquatic passage, and every effort shall be made to maintain the existing channel slope. The potential for destabilization of the channel and head cutting upstream should be considered in the placement of the culvert. A waiver from the depth specifications in this condition may be requested in writing. The waiver will only be issued if it can be demonstrated that the impacts of complying with this condition would result in more adverse impacts to the aquatic environment. Culverts placed in wetlands do not have to be buried.

- g. No work shall be authorized by this RGP within the twenty coastal counties, as defined by the NCDCM, without prior consultation with NOAA Fisheries. For each activity reviewed by the Corps where it is determined that the activity may affect Essential Fish Habitat (EFH) for federally managed species, an EFH Assessment shall be prepared by the applicant and forwarded to the Corps and NOAA Fisheries for review and comment prior to authorization of work.
- h. Discharges of dredged or fill material into waters of the U.S., including wetlands, must be minimized or avoided to the maximum extent practicable.
- i. No activity may result in substantial permanent disruption of the movement of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area. The dimension, pattern, and profile of the stream above and below a pipe or culvert should not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. It is acceptable to use rock vanes at culvert outlets to ensure, enhance, or maintain aquatic passage. Pre-formed scour holes are acceptable when designed for velocity reduction. The width, height, and gradient of a proposed opening should be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. Spring flow should be determined from gauge data, if available. In the absence of such data, bankfull flow can be used as a comparable level. Where adjacent floodplain is available, flows exceeding bank-full should be accommodated by installing culverts at the floodplain elevation, if practicable. If multiple culverts are used, the construction of floodplain benches and/or sills to maintain base flow is required, if practicable.
- j. Upon completion of any work authorized by this RGP, all temporary fills (to include culverts, etc.) will be completely removed from waters of the U.S. and the areas will be restored to preconstruction conditions, to include pre-project elevations and contours, restoring natural hydrology and stream corridors, and reestablishing native vegetation/riparian corridors. This work will be completed within 60 days of completion of project construction. If this timeframe occurs while a required moratorium of this permit is in effect, the temporary fill shall be removed in its entirety within 60 days of the moratorium end date. If vegetation cannot be planted due to the time of the year, all disturbed areas will be seeded with a native mix appropriate for the impacted area, and vegetation will be planted in the fall. A native seed mix may contain non-invasive small grain annuals (e.g. millet and rye grain) to ensure adequate cover while native vegetation becomes established. The PCN must include a restoration plan showing how all temporary fills and structures will be removed and how the area will be restored to pre-project conditions.
- k. All activities authorized by this RGP shall, to the extent practicable, be conducted "in the dry", with barriers installed between work areas and aquatic habitat to protect that habitat from sediment, concrete, and other pollutants. Where concrete is utilized, measures will be taken to prevent live or fresh concrete, including bags of uncured concrete, from coming into contact with waters of the U.S. until the concrete has cured/hardened. All water in the work area that has been in contact with concrete shall only be returned to waters of the U.S. when it no longer poses a threat to aquatic organisms (concrete is set and cured).
- 1. In cases where new alignment approaches are to be constructed and the existing approach fill in waters of the U.S. is to be abandoned and no longer maintained as a roadway, the

abandoned fill shall be removed and the area will be restored to preexisting wetland/stream conditions and elevations, to include restoring natural hydrology and stream corridors, and reestablishing native vegetation/riparian corridors, to the extent practicable. This activity may qualify as compensatory mitigation credit for the project and will be assessed on a case-by-case basis in accordance with Special Conditions "q" and "r" below. A restoration plan detailing this activity will be required with the submittal of the PCN.

- m. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).
- n. The project must be implemented and/or conducted so that all reasonable and practicable measures to ensure that equipment, structures, fill pads, and work associated with the project do not adversely affect upstream and/or downstream reaches. Adverse effects include, but are not limited to, channel instability, flooding, and/or shoreline/streambank erosion. During construction, the permittee shall routinely monitor for these effects, cease all work if/when detected, take initial corrective measures to correct actively eroding areas, and notify the Corps immediately. Permanent corrective measures may require additional authorization from the Corps.
- o. All PCNs will describe sedimentation and erosion control structures and measures proposed for placement in waters of the U.S. To the extent practicable, structures and measures should be depicted on maps, surveys or drawings showing location and impacts to jurisdictional wetlands and streams. In addition, appropriate soil and erosion control measures must be established and maintained during construction. All fills, temporary and permanent, must be adequately stabilized at the earliest practicable date to prevent erosion of fill material into adjacent waters or wetlands.
- p. Before discharging dredged or fill material into waters of the U.S. in the twenty-five (25) mountain counties of North Carolina, the applicant will submit a PCN to the NCWRC and the Corps concurrently. The PCN shall summarize alternatives to conducting work in mountain trout waters considered during the planning process, detail why alternatives were or were not selected, and contain a compensatory mitigation plan for all unavoidable adverse impacts to mountain trout waters. For proposals where a bridge is replaced with a culvert, the PCN must also include details of any on-site evaluations that were conducted to determine that installation of a culvert will not adversely affect passage of fish or other aquatic biota at the project site. This information must include factors such as the proposed slope of the culvert and determinations of how the slope will be expected to allow or impede passage, the necessity of baffles and/or sills to ensure passage, design considerations to ensure that expected baseflow will be maintained for passage and that post-construction velocities will not prevent passage, site conditions that will or will not allow proper burial of the culvert, existing structures (e.g., perched culverts, waterfalls, etc.) and/or stream patterns up and downstream of the culvert site that could affect passage and bank stability, and any other considerations regarding passage. The level of detail for this information should be based on site conditions (i.e., culverts on a slope over 3% will most likely

require more information than culverts on a slope that is less than 1%, etc.). Also, in order to evaluate potential impacts, describe bedforms that will be impacted by the proposed culvert – e.g., pools, glides, riffles, etc. The NCWRC will respond both to the proponent and directly to the Corps.

The twenty-five (25) designated trout counties of North Carolina include Alleghany, Caldwell, Watauga, Ashe, Mitchell, Wilkes, Avery, Burke, Stokes, Surry, Buncombe, Henderson, Polk, Cherokee, Jackson, Rutherford, Clay, Macon, Swain, Graham, Madison, Transylvania, Haywood, McDowell, and Yancey.

The applicant may contact NCWRC at:

North Carolina Wildlife Resources Commission Ms. Marla Chambers Western NCDOT Permit Coordinator 206 Charter Street Albemarle, NC 28001 Office: 704-982-9181

- q. Compensatory mitigation will be required for permanent impacts resulting in a loss of waters of the U.S., including wetlands, from culverts/pipes and associated fill. Mitigation will also be required for stream relocation projects. The applicant will attach a proposed mitigation plan to the PCN. Mitigation proposals will be in accordance with currently approved Wilmington District and/or Corps-wide mitigation regulations and guidance. The Corps Project Manager will make the final determination concerning the appropriate amount and type of mitigation.
- r. Stream relocation(s) associated with projects may be authorized under this RGP. As stated above, mitigation will be required for all relocation projects. If the stream relocation is conducted in accordance with the requirements stated below in 1-5, the relocated segment of stream may* be considered toward reducing the amount of compensatory mitigation required. A relocation plan must be submitted with the PCN that addresses all factors required within the current Wilmington District, Corps of Engineers Stream Mitigation Guidelines, which can include, but may not be limited to:
- (1) The relocated stream has pattern, profile, and dimension based on natural channel design. If natural channel design construction is not possible due to site constraints, the relocated stream must have pattern, profile, and dimension similar to, or better than, the existing stream. Note that site constraints do not include those situations where NCDOT chooses not to acquire additional adjacent property that is available for purchase.
- (2) The new stream meets the current buffer requirements as stated in current District stream mitigation guidance. If the required buffer widths cannot be obtained, a projectby-project decision will be completed to determine if additional compensatory mitigation is required.
 - (3) The new location allows the relocated stream to remain stable (e.g., in a

valley vs. on a slope, no bends that will impact stability, etc.).

- (4) There is no loss of channel for any reason (e.g., old channel is 200' and new channel is 150' = 50' channel loss; part of the new channel is put in a culvert; the new channel (sides and bottom) is hardened with concrete, rip rap, etc.).
- (5) The Corps will determine if monitoring and reporting will be required for a specific project and the parameters of any required monitoring and reporting. If monitoring is required, a monitoring plan must be included with the PCN and meet current requirements.

All relocation plans must clearly depict both the existing channel and the proposed (relocated) channel.

* Conducting stream relocation(s) in accordance with 1-5 above may not fully compensate for the impact and may require additional compensatory mitigation. The Corps Project Manager will determine if the proposed amount of mitigation is adequate on a project-by-project basis.

If stream relocation cannot be conducted in accordance with 1-5 above, mitigation at a 2:1 ratio will typically be required unless: (1) the applicant provides a Stream Quality Assessment Worksheet or NCSAM documentation (when available) that supports a different mitigation ratio; (2) the Corps Project Manager determines that the relocated stream, while not in full compliance with 1-5 above, warrants partial mitigation, or; (3) the Corps determines that the existing stream is an excellent quality stream, in which case a 3:1 mitigation ratio may be required. The Corps Project Manager will make the final determination concerning the appropriate amount and type of mitigation.

If the Corps determines that the proposed stream relocation is of such a magnitude that it cannot be authorized by this RGP, an Individual Permit will be required.

- s. The applicant shall sign and return the compliance certificate that is attached to the RGP verification letter.
- t. In the event that any Federal agency maintains an objection or any required State authorization is outstanding, no notice to proceed will be given until objections are resolved and State authorizations are issued.
- u. The Corps may place additional special conditions, limitations, or restrictions on any verification of the use of RGP 31 on a project-by-project basis.

2. General Conditions.

a. Except as authorized by this RGP or any Corps approved modification to this RGP, no excavation, fill or mechanized land-clearing activities shall take place within waters or wetlands, at any time in the construction or maintenance of this project. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with this project.

- b. Authorization under this RGP does not obviate the need to obtain other federal, state, or local authorizations.
- c. All work authorized by this RGP must comply with the terms and conditions of the applicable CWA Section 401 Water Quality Certification for this RGP issued by the NCDWR.
- d. The permittee shall employ all sedimentation and erosion control measures necessary to prevent an increase in sedimentation or turbidity within waters and wetlands outside the permit area. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).
- e. The activities authorized by this RGP must not interfere with the public's right to free navigation on all navigable waters of the U.S. No attempt will be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the authorized work for a reason other than safety.
- f. The permittee understands and agrees that, if future operations by the U.S. require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.
- g. The permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the work will, without expense to the U.S. and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the affected water of the U.S. to its former conditions.
- h. The permittee will allow the Wilmington District Engineer or his representative to inspect the authorized activity at any time deemed necessary to assure that the activity is being performed or maintained in strict accordance with the Special and General Conditions of this permit.
 - i. This RGP does not grant any property rights or exclusive privileges.
 - j. This permit does not authorize any injury to the property or rights of others.
- k. This RGP does not authorize the interference with any existing or proposed federal project.
- 1. In issuing this permit, the Federal Government does not assume any liability for the following:
 - (1) Damages to the permitted project or uses thereof as a result of other permitted

or unpermitted activities or from natural causes.

- (2) Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the U.S. in the public interest.
- (3) Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
 - (4) Design or construction deficiencies associated with the permitted work.
- (5) Damage claims associated with any future modification, suspension, or revocation of this permit.
- m. Authorization provided by this RGP may be modified, suspended or revoked in whole or in part if the Wilmington District Engineer, acting for the Secretary of the Army, determines that such action is in the best public interest. The term of this RGP shall be five (5) years unless subject to modification, suspension or revocation. Any modification, suspension or revocation of this authorization will not be the basis for any claim for damages against the U.S. Government.
- n. This RGP does not authorize any activity, which the District Engineer determines, after any necessary investigations, will adversely affect:
- (1) Rivers named in Section 3 of the Wild and Scenic Rivers Act (15 U.S.C. 1273), those proposed for inclusion as provided by Sections 4 and 5 of the Act, and wild, scenic and recreational rivers established by state and local entities.
- (2) Sites included in or determined eligible for listing in the National Registry of Natural Landmarks.
- (3) NOAA designated marine sanctuaries, National Estuarine Research Reserves, and coral reefs.
- (4) Submerged Aquatic Vegetation (SAV) as defined by the N.C. Division of Marine Fisheries at 15A NCAC 03I .0101(4)(i)).

o. Endangered Species.

- (1) No activity is authorized under this RGP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under this RGP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.
- (2) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees (and when FHWA is the lead federal agency) must provide the district engineer with the appropriate documentation to demonstrate compliance with

those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the RGP activity, or whether additional ESA consultation is necessary.

- (3) Non-federal permittees must submit a PCN to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect federally-listed endangered or threatened species or designated critical habitat, the PCN must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-federal applicant of the Corps' determination within 45 days of receipt of a complete PCN notification. In cases where the nonfederal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.
- (4) As a result of formal or informal consultation with the U.S. Fish and Wildlife Service (USFWS) or NMFS, the district engineer may add species-specific endangered species conditions to the RGP.
- (5) Authorization of an activity by a RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, the ESA prohibits any person subject to the jurisdiction of the U.S. to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.
- (6) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.noaa.gov/fisheries.html respectively.
- p. The permittee is responsible for obtaining any "take" permits required under the USFWS's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the USFWS to determine if such "take" permits are required for a particular activity.
 - q. For proposed activities the sixteen counties listed below, applicants must provide a

copy of the PCN to the USFWS, 160 Zillicoa Street, Asheville, North Carolina 28801. This PCN must be sent concurrently to the USFWS and the Corps Project Manager for that specific county.

Counties with tributaries that drain to designated critical habitat that require notification to the Asheville USFWS: Avery, Cherokee, Forsyth, Graham, Haywood, Henderson, Jackson, Macon Mecklenburg, Mitchell, Stokes, Surry, Swain, Transylvania, Union and Yancey.

Applicants may contact the appropriate USFWS office listed below or the US Army Corps of Engineers:

US Fish and Wildlife Service Asheville Field Office 160 Zillicoa Street Asheville, NC 28801 Telephone: (828) 258-3939

Asheville USFWS Office counties: All counties west of and including Anson, Stanly, Davidson, Forsyth and Stokes Counties.

US Fish and Wildlife Service Raleigh Field Office Post Office Box 33726 Raleigh, NC 27636-3726 Telephone: (919) 856-4520

Raleigh USFWS Office counties: all counties east of and including Richmond, Montgomery, Randolph, Guilford, and Rockingham Counties.

- r. Permittees are advised that development activities in or near a floodway may be subject to the National Flood Insurance Program that prohibits any development, including fill, within a floodway that results in any increase in base flood elevations. This RGP does not authorize any activity prohibited by the National Flood Insurance Program.
- s. The permittee must make every reasonable effort to perform the work authorized herein in a manner so as to minimize any adverse impact on fish, wildlife and natural environmental values.
- t. All activities authorized by this RGP that involve the use of riprap material for bank stabilization, the following measures shall be applied:
- (1) Filter cloth must be placed underneath the riprap as an additional requirement of its use in North Carolina waters.
- (2) The placement of riprap shall be limited to the areas depicted on submitted work plan drawings and not be placed in a manner that prevents or impedes fish passage.
 - (3) The riprap material shall be clean and free from loose dirt or any pollutant

except in trace quantities that will not have an adverse environmental effect.

- (4) It shall be of a size sufficient to prevent its movement from the authorized alignment by natural forces under normal conditions.
- (5) The riprap material shall consist of clean rock or masonry material such as, but not limited to, granite, marl, or broken concrete.
- (6) A waiver from the specifications in this general condition may be requested in writing. The waiver will only be issued if it can be demonstrated that the impacts of complying with this condition will result in greater adverse impacts to the aquatic environment.
- u. The permittee must install and maintain, at his expense, any signal lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, on authorized facilities. For further information, the permittee should contact the U.S. Coast Guard Marine Safety Office at (910) 772-2191.
- v. The permittee must maintain any structure or work authorized by this permit in good condition and in conformance with the terms and conditions of this permit. The Permittee is not relieved of this requirement if the Permittee abandons the structure or work. Transfer in fee simple of the work authorized by this permit will automatically transfer this permit to the property's new owner, with all of the rights and responsibilities enumerated herein. The permittee must inform any subsequent owner of all activities undertaken under the authority of this permit and provide the subsequent owner with a copy of the terms and conditions of this permit.
- w. At his sole discretion, any time during the processing cycle, the Wilmington District Engineer may determine that this RGP will not be applicable to a specific proposal. In such case, the procedures for processing an individual permit in accordance with 33 CFR 325 will be available.
- x. The activity must comply with applicable FEMA approved state or local floodplain management requirements.
- y. All fill material placed in waters or wetlands shall be generated from an upland source and will be clean and free of any pollutants except in trace quantities. Metal products, organic materials (including debris from land clearing activities), or unsightly debris will not be used.
 - z. All excavated material will be disposed of in approved upland disposal areas.
 - aa. Historic Properties.
- (1) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places (NRHP), the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

- (2) Federal permittees (or when FHWA is the lead federal agency) should follow their own procedures for complying with the requirements of Section 106 of the NHPA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address Section 106 compliance for this RGP activity, or whether additional Section 106 consultation is necessary.
- (3) Non-federal permittees must submit a PCN to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the NRHP, including previously unidentified properties. For such activities, the PCN must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO), as appropriate, and the NRHP (see 33 CFR 330.4(g)). When reviewing PCNs, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the NHPA. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.
- (4) The district engineer will notify the prospective permittee within 45 days of receipt of a complete PCN whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA Section 106 consultation is required and will occur, the district engineer will notify the non-federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.
- (5) Prospective permittees should be aware that Section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit will relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the

undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

- bb. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the NRHP.
- cc. There will be no unreasonable interference with navigation or the right of the public to riparian access by the existence or use of activities authorized by this RGP.
- dd. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.
- ee. This RGP will not be applicable to proposed construction when the Wilmington District Engineer determines that the proposed activity will significantly affect the quality of the human environment and determines that an EIS must be prepared.
- ff. Activities which have commenced (i.e. are under construction) or are under contract to commence in reliance upon this general permit will remain authorized provided the activity is completed within twelve months of the date of the general permit's expiration, modification, or revocation. Activities completed under the authorization of this general permit which were in effect at the time the activity was completed continue to be authorized by the general permit.

nders Sr.

Colonel, U. S. Army District Commander

BY AUTHORITY OF THE SECRETARY OF THE ARMY:



ROY COOPER

Governor

MICHAEL S. REGAN Secretary

S. JAY ZIMMERMAN

Director

May 8, 2017 Craven County NCDWR Project No. 20170269 Highway 70 Improvements TIP R-5516

APPROVAL of 401 WATER QUALITY CERTIFICATION and NEUSE BUFFER AUTHORIZATION with ADDITIONAL CONDITIONS

Mr. Philip S. Harris, III, P.E., CPM Natural Environment Section Head Project Development and Environmental Analysis North Carolina Department of Transportation 1598 Mail Service Center Raleigh, North Carolina, 27699-1598

Dear Mr. Harris:

You have our approval, in accordance with the conditions listed below, for the following impacts for the purpose of making improvements to U.S. Highway 70 and Slocum Road at the Cherry Point Military Base in Craven County:

Stream Impacts in the Neuse River Basin

| Site | Permanent Fill in Intermittent Stream (linear ft) | Temporary Fill in Intermittent Stream (linear ft) | Permanent Fill in Perennial Stream (linear ft) | Temporary Fill in Perennial Stream (linear ft) | Total Stream Impact (linear ft) | Stream Impacts Requiring Mitigation (linear ft) | |
|-------|---|---|--|---|---------------------------------------|---|--|
| 1 | | - | 329 | 132 | 461 | 329 | |
| 2 | 111 | <u>-</u> | | - | 111 | *n/a | |
| 5 | - | | 137 | 47 | 184 | **n/a | |
| 6 | - | | | 51 | 217 | 166 | |
| 7 | 5 - | | 311 | 311 43 | | 311 | |
| Total | 111 | - | 1,054 | 273 | 1,327 | 806 | |

Total Stream Impact for Project: 1,327 linear feet.

^{*}n/a= intermittent stream, no mitigation required.

^{**}n/a=permanent impacts <150 ft., no mitigation required.

Wetland Impacts in the Neuse River Basin

| Site | Wetland Type | Fill (ac) | Fill (temporary) (ac) | Excavation (ac) | Mechanized Clearing (ac) | Hand Clearing (ac) | Total Wetland Impact (ac) |
|------------|--------------|--------------|-----------------------------|-----------------|--------------------------------|--------------------------|------------------------------|
| 1 | riverine | 0.10 | 154 | 0.12 | 0.16 | 1 2 | 0.38 |
| 2 | riverine | | | · · | 0.02 | | 0.02 |
| 3 | riverine | 0.16 | | 0.04 | 9.4 | 1.91 | 0.20 |
| 4 | riverine | | - | | 0.03 | - | 0.03 |
| 6 | riverine | 0.16 | | 0.06 | 0.03 | | 0.25 |
| 7 | riverine | 0.28 | | 0.01 | 0.20 | - | 0.49 |
| 7(utility) | riverine | 0.01 | 0.01 | H 6 | | - 4. | 0.02 |
| Total | | 0.71 | 0.01 | 0.23 | 0.44 | 0.0 | 1,39 |

Total Wetland Impact for Project: 1.39 acres.

Neuse Riparian Buffer Impacts

| | _ | ricuse Mipari | an Butter Impa | icts | - | r | | |
|----------------|-----------------------------|---|--|--|-----------------------------|---|---|--|
| Site | Zone 1 Impact (sq ft) | minus Wetlands in Zone 1 (sq ft) | = Zone 1 Buffers (not wetlands) (sq ft) | Zone 1 Buffer Mitigation Required (using 3:1 ratio) | Zone 2 Impact (sq ft) | minus Wetlands in Zone 2 (sq ft) | = Zone 2 Buffers (not wetlands) (sq ft) | Zone 2 Buffer Mitigation Required (using 1.5:1 ratio) |
| 1 | 25351 | 9690 | 15661 | 46983 | 15896 | 2360 | 13536 | 20304 |
| 2 | 4990 | 1231 | 3759 | *11277 | 1804 | 0 | 1804 | *2706 |
| 3 | 0 | 0 | 0 | 0 | 874 | 0 | 874 | **1311 |
| 5 | 9538 | 0 | 9538 | 28614 | 5519 | 0 | 5519 | 8729 |
| 6 | 11717 | 7965 | 3752 | 11256 | 8272 | 1635 | 6637 | 9956 |
| 7 | 18155 | 16895 | 1260 | 3780 | 8105 | 2764 | 5341 | 8012 |
| 7 (utility) | 215 | 0 | 215 | n/a | 728 | 0 | 728 | n/a |
| Totals | 69,966 | 35,781 | 34,185 | 101,910 | 41,198 | 6,759 | 34,439 | 51,018 |

^{*=} Site 2 is on the same stream as sites 6 and 7, total impacts > 1/3 ac, mitigation required

Total Buffer Impact for Project: 111,164 square feet.

The project shall be constructed in accordance with your application dated received March 7, 2017 and additional information received May 8, 2017. After reviewing your application, we have decided that these impacts are covered by General Water Quality Certification Number 3886. This certification corresponds to the Regional General Permit 198200031 issued by the Corps of Engineers. This approval is also valid for the Neuse Riparian Buffer Rules (15A NCAC 2B.0233). In addition, you should acquire any other federal, state or local permits before you proceed with your project including (but not limited to) Sediment and Erosion Control, Non-Discharge and Water Supply Watershed regulations. This approval will expire with the accompanying 404 permit.

^{**=} Road impacts other than crossings of streams, mitigation required

This approval is valid solely for the purpose and design described in your application (unless modified below). Should your project change, you must notify the NCDWR and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If total wetland fills for this project (now or in the future) exceed one acre, or of total impacts to streams (now or in the future) exceed 150 linear feet, compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). Additional buffer impacts may require compensatory mitigation as described in 15A NCAC 2B.0233. For this approval to remain valid, you must adhere to the conditions listed in the attached certification(s) and any additional conditions listed below.

Condition(s) of Certification:

Project Specific Conditions

- Compensatory mitigation for impacts to 1.38 acres of riverine wetlands is required. We understand that you have chosen to perform compensatory mitigation for unavoidable impacts to wetlands through debit of the Three Swamp Mitigation Site (ONEID 069-001) located in Pamlico and Craven County within the USGS hydrologic unit 03020204. The NCDOT On-site Debit Ledger for this site shall be updated to reflect the required amount of mitigation.
- 2. Compensatory mitigation for 806 linear feet of impact to streams is required. We understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Division of Mitigation Service (DMS) (formerly NCEEP), and that the DMS has agreed to implement the mitigation for the project. The DMS has indicated in a letter dated February 21, 2017 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the DMS Mitigation Banking Instrument signed July 28, 2010.
- 3. Compensatory mitigation for impacts to 33,970 square feet of protected riparian buffers in Zone 1 and 33,711 square feet of protected riparian buffers in Zone 2 shall be required. We understand that you have chosen to perform compensatory mitigation for impacts to protected buffers through use of the North Carolina Division of Mitigation Services (DMS) (formerly NCEEP). Mitigation for unavoidable impacts to Neuse Riparian Buffers shall be provided in the Neuse River Basin and done in accordance with 15A NCAC .02B .0295. The DMS has indicated in a letter dated February 21, 2017 that they will assume responsibility for satisfying the compensatory mitigation requirements for the above-referenced project, in accordance with DMS's Mitigation Banking Instrument signed June 14, 2016.
 - 4. For this authorization to be valid, DWR requires confirmation that the required buffer mitigation credits are available. If DMS cannot provide the required riparian buffer mitigation, the impacts to jurisdictional resources approved with this certification are not allowed prior to receipt of confirmation of the available buffer mitigation credits from another DWR approved source.

General Conditions

- The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.
- *2. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval. [15A NCAC 02H .0507(c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]
 - 3. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and downstream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWR. If this condition is unable to be met due to bedrock or other limiting features encountered during construction,

please contact NCDWR for guidance on how to proceed and to determine whether or not a permit modification will be required. [15A NCAC 02H.0506(b)(2)]

- 4. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage. [15A NCAC 02H.0506(b)(2)]
- All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water. [15A NCAC 02H.0506(b)(3) and (c)(3)]
- If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills. [15A NCAC 02B.0200]
- 7. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification. [15A NCAC 02H.0501 and .0502]
- During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers. [15A NCAC 02H.0506(b)(2)]
- 9. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification, [15A NCAC 02H.0506(b)(3)]
- The dimension, pattern and profile of the stream above and below the crossing shall not be modified.
 Disturbed floodplains and streams shall be restored to natural geomorphic conditions. [15A NCAC 02H.0506(b)(2)]
- 11. Channel relocations shall be completed and stabilized, and approved on site by NCDWR staff, prior to diverting water into the new channel. Stream banks shall be matted with coir-fiber matting. Vegetation used for bank stabilization shall be limited to native riparian vegetation, and should include establishment of a vegetated buffer on both sides of the relocated channel to the maximum extent practical. Also, rip-rap may be allowed if it is necessary to maintain the physical integrity of the stream, but the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage requested. Once the stream has been turned into the new channel, it may be necessary to relocate stranded fish to the new channel to prevent fish kills. [15A NCAC 02H .0506(b)(3)
- Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards [15A NCAC 02H.0506(b)(3) and (c)(3]):
 - a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the North Carolina Sediment and Erosion Control Planning and Design Manual.
 - b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the North Carolina Sediment and Erosion Control Manual. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
 - c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the North Carolina Surface Mining Manual.
 - d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

- 13. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification. [15A NCAC 02H.0506(b)(3) and (c)(3)]
- 14. Erosion control matting in riparian areas shall not contain a nylon mesh grid which can impinge and entrap small animals. Matting should be secured in place by staples, stakes, or wherever possible live stakes of native trees. Riparian areas are defined as a distance 25 feet from top of stream bank. [15A NCAC 02B.0224, .0225]
- 15. Pursuant to 15A NCAC 2B.0233(6), sediment and erosion control devices shall not be placed in Zone 1 of any Neuse Buffer without prior approval by the NCDWR. At this time, the NCDWR has approved no sediment and erosion control devices in Zone 1, outside of the approved project impacts, anywhere on this project. Moreover, sediment and erosion control devices shall be allowed in Zone 2 of the buffers provided that Zone 1 is not compromised and that discharge is released as diffuse flow.
- 16. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. To meet the requirements of NCDOT's NPDES permit NCS0000250, please refer to the most recent version of the North Carolina Department of Transportation Stormwater Best Management Practices Toolbox manual for approved measures. [15A NCAC 02H .0507(d)(2) and 15A NCAC 02H .0506(b)(5)]
- 17. All stormwater runoff shall be directed as sheetflow through stream buffers at non-erosive velocities, unless otherwise approved by this certification. (15A NCAC 2B.0233)
- 18. New roadside ditches that do not control for nitrogen and attenuate flow before discharging through the riparian buffer are prohibited [15A NCAC 2B.0233(6)]
- 19. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage. [15A NCAC 02H.0506(b)(2)]
- 20. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream. [15A NCAC 02H.0506(b)(3)]
- 21. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials. [15A NCAC 02H.0506(b)(3)]
- 22. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification. [15A NCAC 02H.0506(b)(2)]
- 23. Native riparian vegetation must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction. [15A NCAC 02H.0506(b)(2)]
- 24. All riparian buffers impacted by the placement of temporary fill or clearing activities shall be restored to the preconstruction contours and revegetated. Maintained buffers shall be permanently revegetated with non-woody species by the end of the growing season following completion of construction. For the purpose of this condition, maintained buffer areas are defined as areas within the transportation corridor that will be subject to regular NCDOT maintenance activities including mowing. The area with non-maintained buffers shall be permanently revegetated with native woody species before the next growing season following completion of construction. (15A NCAC 2B.0233)
- 25. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited. [15A NCAC 02H.0506(b)(3)]
- 26. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities.[15A NCAC 02H.0506(b)(3) and (c)(3)]
- 27. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any

other appropriate requirements of State and Federal law. If the NCDWR determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, the NCDWR may reevaluate and modify this certification. [15A NCAC 02B.0200]

- 28. The Permittee shall report any violations of this certification to the Division of Water Resources within 24 hours of discovery. [15A NCAC 02B.0506(b)(2)]
- 29. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer shall complete and return the enclosed "Certification of Completion Form" to notify the NCDWR when all work included in the 401 Certification has been completed. [15A NCAC 02H.0502(f)]
- 30. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager. [15A NCAC 02H .0507(c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]

If you wish to contest any statement in the attached Certification you must file a petition for an administrative hearing. You may obtain the petition form from the office of Administrative hearings. You must file the petition with the office of Administrative Hearings within sixty (60) days of receipt of this notice. A petition is considered filed when it is received in the office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00am and 5:00pm, except for official state holidays. The original and one (1) copy of the petition must be filed with the Office of Administrative Hearings.

The petition may be faxed-provided the original and one copy of the document is received by the Office of Administrative Hearings within five (5) business days following the faxed transmission. The mailing address for the Office of Administrative Hearings is:

Office of Administrative Hearings 6714 Mail Service Center Raleigh, NC 27699-6714 Telephone: (919) 431-3000, Facsimile: (919) 431-3100

A copy of the petition must also be served on DEQ as follows:

Mr. Bill Lane, General Counsel Department of Environmental Quality 1601 Mail Service Center

This letter completes the review of the Division of Water Resources under Section 401 of the Clean Water Act. If you have any questions, please contact Garcy Ward at (252)946-6481or garcy.ward@ncdenr.gov.

S. Jay Zimmerman, Director Division of Water Resources

Sincerely.

Electronic copy only distribution:

Tom Steffens, US Army Corps of Engineers, Washington Field Office
Jay Johnson, Division 2 Environmental Officer
Colin Mellor, NC Department of Transportation
Chris Rivenbark, NC Department of Transportation
Travis Wilson, NC Wildlife Resources Commission
Jason Elliott, NCDOT, Natural Environment Section
Beth Harmon, Division of Mitigation Services
Garcy Ward, NC Division of Water Resources, Washington Regional Office
File Copy

STATE OF NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES

WATER QUALITY GENERAL CERTIFICATION NO. 4088

GENERAL CERTIFICATION FOR PROJECTS ELIGIBLE FOR US ARMY CORPS OF ENGINEERS

- NATIONWIDE PERMIT NUMBER 14 (LINEAR TRANSPORTATION PROJECTS), AND
- REGIONAL GENERAL PERMIT 198200031 (NCDOT BRIDGES, WIDENING PROJECTS, INTERCHANGE IIMPROVEMENTS)

Water Quality Certification Number 4088 is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Regulations in 15A NCAC 02H .0500 and 15A NCAC 02B .0200 for the discharge of fill material to surface waters and wetland areas as described in 33 CFR 330 Appendix A (B) (14) of the US Army Corps of Engineers regulations and Regional General Permit 198200031.

The State of North Carolina certifies that the specified category of activity will not violate applicable portions of Sections 301, 302, 303, 306 and 307 of the Public Laws 92-500 and 95-217 if conducted in accordance with the conditions hereinafter set forth.

Effective date: March 19, 2017

Signed this day March 3, 2017

By

for S. Jay Zimmerman, P.G.

Director

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Activities meeting any one (1) of the following thresholds or circumstances require <u>written</u> <u>approval</u> for a 401 Water Quality Certification from the Division of Water Resources (DWR):

- a) If any of the conditions of this Certification (listed below) cannot be met; or
- b) Any temporary or permanent impacts to wetlands, open waters and/or streams, except for construction of a driveway to a single family residential lot that are not determined to be part of a larger common plan of development as long as the driveway involves less than 25 feet of total stream impacts, including any in-stream stabilization needed for the crossing; or
- c) Any stream relocation or stream restoration; or
- d) Any high density project, as defined in 15A NCAC 02H .1003(2)(a) and by the density thresholds specified in 15A NCAC 02H .1017, which does not have a stormwater management plan reviewed and approved under a state stormwater program¹ or a state-approved local government stormwater program². Projects that have vested rights, exemptions, or grandfathering from state or locally-implemented stormwater programs and projects that satisfy state or locally-implemented stormwater programs through use of community in-lieu programs require written approval; or
- e) Any impacts to waters, or to wetlands adjacent to waters, designated as: ORW (including SAV), HQW (including PNA), SA, WS-I, WS-II, Trout, or North Carolina or National Wild and Scenic River; or
- f) Any impacts to coastal wetlands [15A NCAC 07H .0205], or Unique Wetlands (UWL); or
- g) Any impact associated with a Notice of Violation or an enforcement action for violation(s) of NC Wetland Rules (15A NCAC 02H .0500), NC Isolated Wetland Rules (15A NCAC 02H .1300), NC Surface Water or Wetland Standards (15A NCAC 02B .0200), or State Regulated Riparian Buffer Rules (15A NCAC 02B .0200); or
- * h) Any impacts to subject water bodies and/or state regulated riparian buffers along subject water bodies in the Neuse, Tar-Pamlico, or Catawba River Basins or in the Randleman Lake, Jordan Lake or Goose Creek Watersheds (or any other basin or watershed with State Regulated Riparian Area Protection Rules [Buffer Rules] in effect at the time of application) unless:
 - i) The activities are listed as "EXEMPT" from these rules; or
 - ii) A Buffer Authorization Certificate is issued by the NC Division of Coastal Management (DCM); or
 - iii) A Buffer Authorization Certificate or a Minor Variance is issued by a delegated or designated local government implementing a state riparian buffer program pursuant to 143-215.23

Activities included in this General Certification that do not meet one of the thresholds listed above do not require written approval.

¹ e.g. Coastal Counties, HQW, ORW, or state-implemented Phase II NPDES

² e.g. Delegated Phase II NPDES, Water Supply Watershed, Nutrient-Sensitive Waters, or Universal Stormwater Management Program

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I. ACTIVITY SPECIFIC CONDITIONS:

- If this Water Quality Certification is used to access residential, commercial or industrial building sites, then all parcels owned by the applicant that are part of the single and complete project authorized by this Certification must be buildable without additional impacts to streams or wetlands. If required in writing by DWR, the applicant shall provide evidence that the parcels are buildable without requiring additional impacts to wetlands, waters, or state regulated riparian buffers. [15A NCAC 02H .0506(b)(4) and (c)(4)]
- 2. For road and driveway construction purposes, this Certification shall only be utilized from natural high ground to natural high ground. [15A NCAC 02H .0506(b)(2) and (c)(2)]
- 3. Deed notifications or similar mechanisms shall be placed on all lots with retained jurisdictional wetlands, waters, and state regulated riparian buffers within the project boundaries in order to assure compliance with NC Wetland Rules (15A NCAC 02H .0500), NC Isolated Wetland Rules (15A NCAC 02H .1300), and/or State Regulated Riparian Buffer Rules (15A NCAC 02B .0200). These mechanisms shall be put in place at the time of recording of the property or individual parcels, whichever is appropriate. [15A NCAC 02H .0506(b)(4) and (c)(4)]
- 4. For the North Carolina Department of Transportation, compliance with the NCDOT's individual NPDES permit NCS000250 shall serve to satisfy this condition. For all other projects that disturb one acre or more of land (including a project that disturbs less than one acre of land that is part of a larger common plan of development or sale); have permanent wetland, stream, or open water impacts; and are proposing new built-upon area shall comply with the following requirements: [15A NCAC 02H .0506(b)(5) and (c)(5)]
 - a. Stormwater management shall be provided throughout the entire project area in accordance with 15A NCAC 02H .1003. For the purposes of 15A NCAC 02H .1003(2)(a), density thresholds shall be determined in accordance with 15A NCAC 02H .1017.
 - b. Projects that have vested rights, exemptions, or grandfathering from state or locally-implemented stormwater programs do not satisfy this condition. Projects that satisfy state or locally-implemented stormwater programs through use of community in-lieu programs do not satisfy this condition.
 - c. Projects that require written authorization from DWR shall submit the following with their application for review and approval:
 - For projects that have a stormwater management plan (SMP) reviewed under a state stormwater program¹ or a state-approved local government stormwater program² shall submit plans that show the location and approximate size of all proposed stormwater measures;

¹ e.g. Coastal Counties, HQW, ORW, or state-implemented Phase II NPDES

² e.g. Delegated Phase II NPDES, Water Supply Watershed, Nutrient-Sensitive Waters, or Universal Stormwater Management Program

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- ii. All other low density projects not covered above shall submit a completed low density supplement form with all required items; and
- iii. All other high density projects not covered above shall submit a completed SMP, including all appropriate stormwater control measure (SCM) supplemental forms and associated items, that complies with the high density development requirements of 15A NCAC 02H .1003.
- d. Projects that do not require written approval from DWR shall obtain approval of the SMP, when required, before any impacts authorized by this Certification occur.
- e. SMPs approved by DWR may be phased on a case-by-case basis. SMPs for each future phase must be approved before construction of that phase commences. Approved SMPs may not be modified without prior written authorization from DWR.

II. GENERAL CONDITIONS:

- * 1. When written authorization is required, the plans and specifications for the project are incorporated into the authorization by reference and are an enforceable part of the Certification. Any modifications to the project require notification to DWR and may require an application submittal to DWR with the appropriate fee. [15A NCAC 02H .0501 and .0502]
 - No waste, spoil, solids, or fill of any kind shall occur in wetlands or waters beyond the footprint of the impacts (including temporary impacts) as authorized in the written approval from DWR; or beyond the thresholds established for use of this Certification without written authorization. [15A NCAC 02H .0501 and .0502]
 - No removal of vegetation or other impacts of any kind shall occur to state regulated riparian buffers beyond the footprint of impacts approved in a Buffer Authorization or Variance or as listed as an exempt activity in the applicable riparian buffer rules. [15A NCAC 02B .0200]
- * 3. In accordance with 15A NCAC 02H .0506(h), compensatory mitigation may be required for losses of greater than 150 linear feet of streams and/or greater than one (1) acre of wetlands. Impacts to isolated and other non-404 jurisdictional wetlands shall not be combined with 404 jurisdictional wetlands for the purpose of determining when impact thresholds trigger a mitigation requirement. For linear publicly owned and maintained transportation projects that are not determined to be part of a larger common plan of development by the US Army Corps of Engineers, compensatory mitigation may be required for losses of greater than 150 linear feet per stream.

Compensatory stream and/or wetland mitigation shall be proposed and completed in compliance with G.S. 143-214.11. For applicants proposing to conduct mitigation within a project site, a complete mitigation proposal developed in accordance with the most recent guidance issued by the US Army Corps of Engineers Wilmington District shall be submitted for review and approval with the application for impacts.

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- All activities shall be in compliance with any applicable State Regulated Riparian Buffer Rules in Chapter 2 of Title 15A.
- 5. When applicable, all construction activities shall be performed and maintained in full compliance with G.S. Chapter 113A Article 4 (Sediment and Pollution Control Act of 1973). Regardless of applicability of the Sediment and Pollution Control Act, all projects shall incorporate appropriate Best Management Practices for the control of sediment and erosion so that no violations of state water quality standards, statutes, or rules occur. [15A NCAC 02H .0506(b)(3) and (c)(3) and 15A NCAC 02B .0200]

Design, installation, operation, and maintenance of all sediment and erosion control measures shall be equal to or exceed the requirements specified in the most recent version of the North Carolina Sediment and Erosion Control Manual, or for linear transportation projects, the NCDOT Sediment and Erosion Control Manual.

All devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) sites, including contractor-owned or leased borrow pits associated with the project. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.

For borrow pit sites, the erosion and sediment control measures shall be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*. Reclamation measures and implementation shall comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.

If the project occurs in waters or watersheds classified as Primary Nursery Areas (PNAs), SA, WS-I, WS-II, High Quality Waters (HQW), or Outstanding Resource Waters (ORW), then the sedimentation and erosion control designs shall comply with the requirements set forth in 15A NCAC 04B .0124, Design Standards in Sensitive Watersheds.

- Sediment and erosion control measures shall not be placed in wetlands or waters except within the footprint of temporary or permanent impacts authorized under this Certification. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0501 and .0502]
- Erosion control matting that incorporates plastic mesh and/or plastic twine shall not be used along streambanks or within wetlands. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02B .0201]

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8. An NPDES Construction Stormwater Permit (NCG010000) is required for construction projects that disturb one (1) or more acres of land. The NCG010000 Permit allows stormwater to be discharged during land disturbing construction activities as stipulated in the conditions of the permit. If the project is covered by this permit, full compliance with permit conditions including the erosion & sedimentation control plan, inspections and maintenance, self-monitoring, record keeping and reporting requirements is required. [15A NCAC 02H .0506(b)(5) and (c)(5)]

The North Carolina Department of Transportation (NCDOT) shall be required to be in full compliance with the conditions related to construction activities within the most recent version of their individual NPDES (NCS000250) stormwater permit. [15A NCAC 02H .0506(b)(5) and (c)(5)]

- 9. All work in or adjacent to streams shall be conducted so that the flowing stream does not come in contact with the disturbed area. Approved best management practices from the most current version of the NC Sediment and Erosion Control Manual, or the NC DOT Construction and Maintenance Activities Manual, such as sandbags, rock berms, cofferdams, and other diversion structures shall be used to minimize excavation in flowing water. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0506(b)(3) and (c)(3)]
- 10. If activities must occur during periods of high biological activity (e.g. sea turtle nesting, fish spawning, or bird nesting), then biological monitoring may be required at the request of other state or federal agencies and coordinated with these activities. [15A NCAC 02H .0506 (b)(2) and 15A NCAC 04B .0125]

All moratoriums on construction activities established by the NC Wildlife Resources Commission (WRC), US Fish and Wildlife Service (USFWS), NC Division of Marine Fisheries (DMF), or National Marine Fisheries Service (NMFS) shall be implemented. Exceptions to this condition require written approval by the resource agency responsible for the given moratorium. A copy of the approval from the resource agency shall be forwarded to DWR.

Work within a designated trout watershed of North Carolina (as identified by the Wilmington District of the US Army Corps of Engineers), or identified state or federal endangered or threatened species habitat, shall be coordinated with the appropriate WRC, USFWS, NMFS, and/or DMF personnel.

11. Culverts shall be designed and installed in such a manner that the original stream profiles are not altered and allow for aquatic life movement during low flows. The dimension, pattern, and profile of the stream above and below a pipe or culvert shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed culvert shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. [15A NCAC 02H .0506(b)(2) and (c)(2)]

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Placement of culverts and other structures in streams shall be below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20% of the culvert diameter for culverts having a diameter less than or equal to 48 inches, to allow low flow passage of water and aquatic life.

If multiple pipes or barrels are required, they shall be designed to mimic the existing stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel shall be avoided.

When topographic constraints indicate culvert slopes of greater than 5%, culvert burial is not required, provided that all alternative options for flattening the slope have been investigated and aquatic life movement/connectivity has been provided when possible (e.g. rock ladders, cross vanes, etc.). Notification, including supporting documentation to include a location map of the culvert, culvert profile drawings, and slope calculations, shall be provided to DWR 60 calendar days prior to the installation of the culvert.

When bedrock is present in culvert locations, culvert burial is not required provided that there is sufficient documentation of the presence of bedrock. Notification, including supporting documentation such as, a location map of the culvert, geotechnical reports, photographs, etc. shall be provided to DWR a minimum of 60 calendar days prior to the installation of the culvert. If bedrock is discovered during construction, then DWR shall be notified by phone or email within 24 hours of discovery.

If other site-specific topographic constraints preclude the ability to bury the culverts as described above and/or it can be demonstrated that burying the culvert would result in destabilization of the channel, then exceptions to this condition require application to and written approval from DWR.

Installation of culverts in wetlands shall ensure continuity of water movement and be designed to adequately accommodate high water or flood conditions. When roadways, causeways, or other fill projects are constructed across FEMA-designated floodways or wetlands, openings such as culverts or bridges shall be provided to maintain the natural hydrology of the system as well as prevent constriction of the floodway that may result in destabilization of streams or wetlands.

The establishment of native woody vegetation and other soft stream bank stabilization techniques shall be used where practicable instead of rip-rap or other bank hardening methods.

12. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means to the maximum extent practicable (e.g. grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0506(b)(5)]

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- 13. Application of fertilizer to establish planted/seeded vegetation within disturbed riparian areas and/or wetlands shall be conducted at agronomic rates and shall comply with all other Federal, State and Local regulations. Fertilizer application shall be accomplished in a manner that minimizes the risk of contact between the fertilizer and surface waters. [15A NCAC 02B .0200 and 15A NCAC 02B .0231]
- 14. If concrete is used during construction, then all necessary measures shall be taken to prevent direct contact between uncured or curing concrete and waters of the state. Water that inadvertently contacts uncured concrete shall not be discharged to waters of the state. [15A NCAC 02B .0200]
- 15. All proposed and approved temporary fill and culverts shall be removed and the impacted area shall be returned to natural conditions within 60 calendar days after the temporary impact is no longer necessary. The impacted areas shall be restored to original grade, including each stream's original cross sectional dimensions, planform pattern, and longitudinal bed profile. For projects that receive written approval, no temporary impacts are allowed beyond those included in the application and authorization. All temporarily impacted sites shall be restored and stabilized with native vegetation. [15A NCAC 02H .0506(b)(2) and (c)(2)]
- 16. All proposed and approved temporary pipes/culverts/rip-rap pads etc. in streams shall be installed as outlined in the most recent edition of the North Carolina Sediment and Erosion Control Planning and Design Manual or the North Carolina Surface Mining Manual or the North Carolina Department of Transportation Best Management Practices for Construction and Maintenance Activities so as not to restrict stream flow or cause dis-equilibrium during use of this Certification. [15A NCAC 02H .0506(b)(2) and (c)(2)]
- 17. Any rip-rap required for proper culvert placement, stream stabilization, or restoration of temporarily disturbed areas shall be restricted to the area directly impacted by the approved construction activity. All rip-rap shall be placed such that the original stream elevation and streambank contours are restored and maintained. Placement of rip-rap or other approved materials shall not result in de-stabilization of the stream bed or banks upstream or downstream of the area or in a manner that precludes aquatic life passage. [15A NCAC 02H .0506(b)(2)]
- 18. Any rip-rap used for stream or shoreline stabilization shall be of a size and density to prevent movement by wave, current action, or stream flows and shall consist of clean rock or masonry material free of debris or toxic pollutants. Rip-rap shall not be installed in the streambed except in specific areas required for velocity control and to ensure structural integrity of bank stabilization measures. [15A NCAC 02H .0506(b)(2)]
- 19. Applications for rip-rap groins proposed in accordance with 15A NCAC 07H .1401 (NC Division of Coastal Management General Permit for construction of Wooden and Rip-rap Groins in Estuarine and Public Trust Waters) shall meet all the specific conditions for design and construction specified in 15A NCAC 07H .1405.

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- 20. All mechanized equipment operated near surface waters shall be inspected and maintained regularly to prevent contamination of surface waters from fuels, lubricants, hydraulic fluids, or other toxic materials. Construction shall be staged in order to minimize the exposure of equipment to surface waters to the maximum extent practicable. Fueling, lubrication and general equipment maintenance shall not take place within 50 feet of a waterbody or wetlands to prevent contamination by fuels and oils. [15A NCAC 02H .0506(b)(3) and (c)(3) and 15A NCAC 02B .0211 (12)]
- 21. Heavy equipment working in wetlands shall be placed on mats or other measures shall be taken to minimize soil disturbance. [15A NCAC 02H .0506(b)(3) and (c)(3)]
- 22. In accordance with 143-215.85(b), the applicant shall report any petroleum spill of 25 gallons or more; any spill regardless of amount that causes a sheen on surface waters; any petroleum spill regardless of amount occurring within 100 feet of surface waters; and any petroleum spill less than 25 gallons that cannot be cleaned up within 24 hours.
- * 23. If an environmental document is required under the State Environmental Policy Act (SEPA), then this General Certification is not valid until a Finding of No Significant Impact (FONSI) or Record of Decision (ROD) is issued by the State Clearinghouse. If an environmental document is required under the National Environmental Policy Act (NEPA), then this General Certification is not valid until a Categorical Exclusion, the Final Environmental Assessment, or Final Environmental Impact Statement is published by the lead agency. [15A NCAC 01C .0107(a)]
 - 24. This General Certification does not relieve the applicant of the responsibility to obtain all other required Federal, State, or Local approvals before proceeding with the project, including those required by, but not limited to, Sediment and Erosion Control, Non-Discharge, Water Supply Watershed, and Trout Buffer regulations.
 - 25. The applicant and their authorized agents shall conduct all activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act), and any other appropriate requirements of State and Federal Law. If DWR determines that such standards or laws are not being met, including failure to sustain a designated or achieved use, or that State or Federal law is being violated, or that further conditions are necessary to assure compliance, then DWR may revoke or modify a written authorization associated with this General Water Quality Certification. [15A NCAC 02H .0507(d)]
- * 26. When written authorization is required for use of this Certification, upon completion of all permitted impacts included within the approval and any subsequent modifications, the applicant shall be required to return a certificate of completion (available on the DWR website https://edocs.deq.nc.gov/Forms/Certificate-of-Completion). [15A NCAC 02H .0502(f)]

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- 27. Additional site-specific conditions, including monitoring and/or modeling requirements, may be added to the written approval letter for projects proposed under this Water Quality Certification in order to ensure compliance with all applicable water quality and effluent standards. [15A NCAC 02H .0507(c)]
- 28. If the property or project is sold or transferred, the new Permittee shall be given a copy of this Certification (and written authorization if applicable) and is responsible for complying with all conditions. [15A NCAC 02H .0501 and .0502]

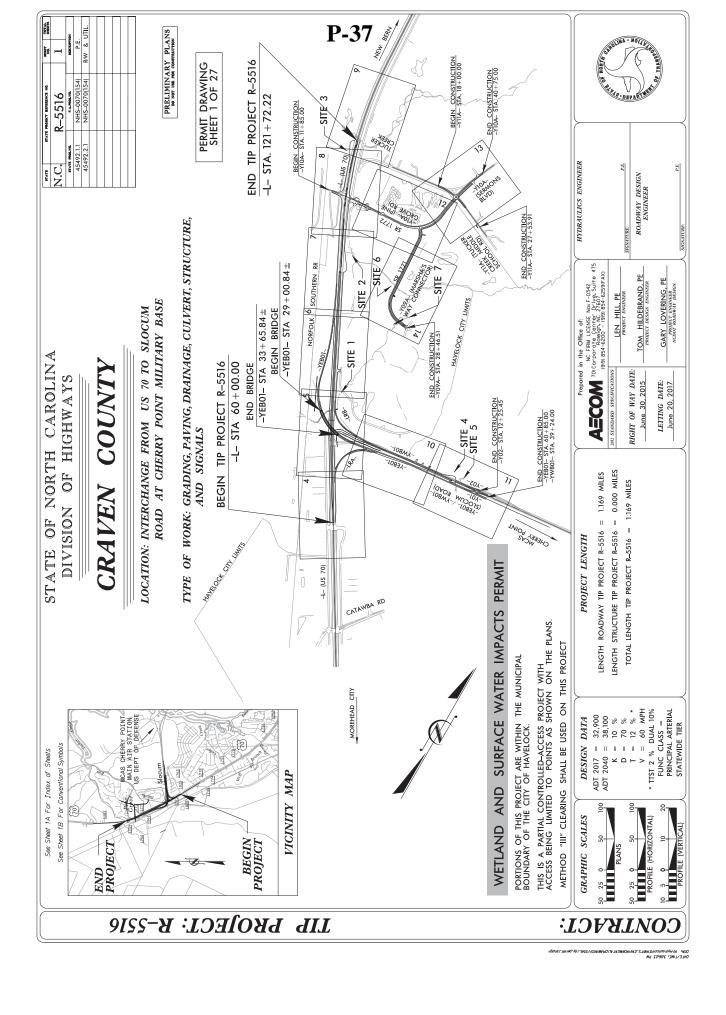
III. GENERAL CERTIFICATION ADMINISTRATION:

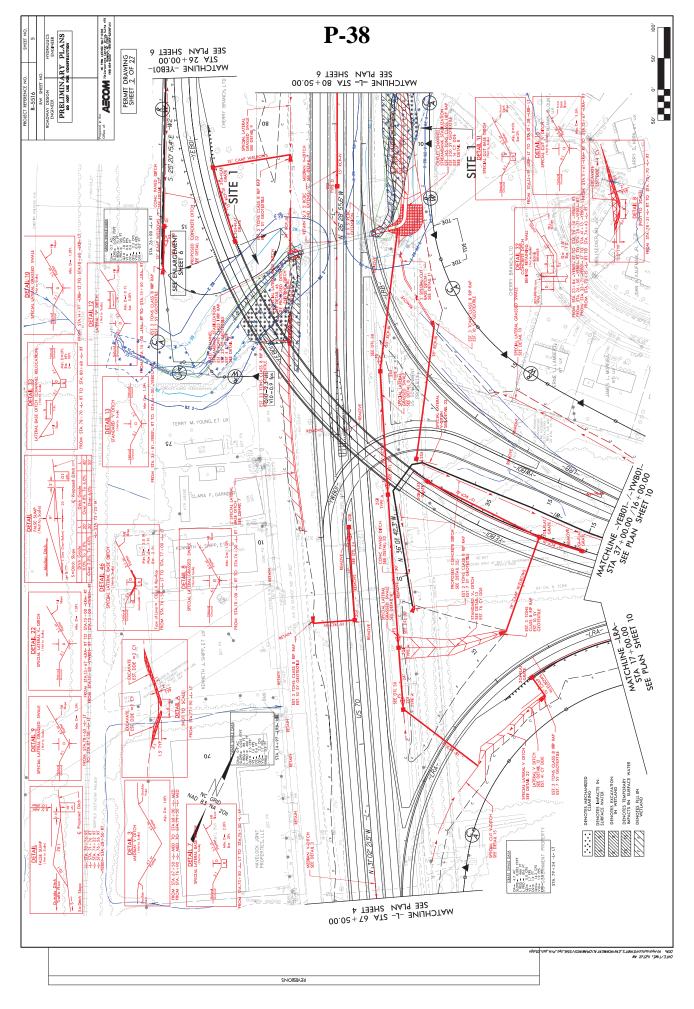
- *1. In accordance with North Carolina General Statute 143-215.3D(e), written approval for a 401 Water Quality General Certification must include the appropriate fee. An applicant for a CAMA permit under Article 7 of Chapter 113A of the General Statutes for which a Water Quality Certification is required shall only make one payment to satisfy both agencies; the fee shall be as established by the Secretary in accordance with 143-215.3D(e)(7).
 - 2. This Certification neither grants nor affirms any property right, license, or privilege in any waters, or any right of use in any waters. This Certification does not authorize any person to interfere with the riparian rights, littoral rights, or water use rights of any other person and this Certification does not create any prescriptive right or any right of priority regarding any usage of water. This Certification shall not be interposed as a defense in any action respecting the determination of riparian or littoral rights or other rights to water use. No consumptive user is deemed by virtue of this Certification to possess any prescriptive or other right of priority with respect to any other consumptive user regardless of the quantity of the withdrawal or the date on which the withdrawal was initiated or expanded.
 - 3. This Certification grants permission to the Director, an authorized representative of the Director, or DWR staff, upon the presentation of proper credentials, to enter the property during normal business hours. [15A NCAC 02H .0502(e)]
 - 4. This General Certification shall expire on the same day as the expiration date of the corresponding Nationwide Permit and/or Regional General Permit. The conditions in effect on the date of issuance of Certification for a specific project shall remain in effect for the life of the project, regardless of the expiration date of this Certification. This General Certification is rescinded when the US Army Corps of Engineers reauthorizes any of the corresponding Nationwide Permits and/or Regional General Permits or when deemed appropriate by the Director of the Division of Water Resources.
 - Non-compliance with or violation of the conditions herein set forth by a specific project may result in revocation of this General Certification for the project and may also result in criminal and/or civil penalties.

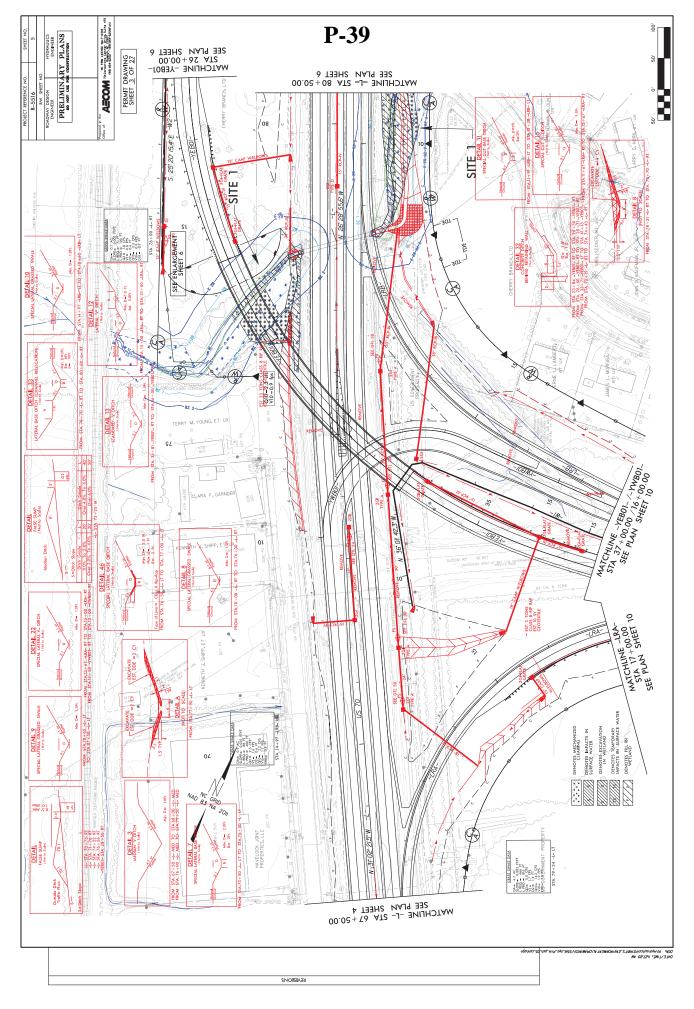
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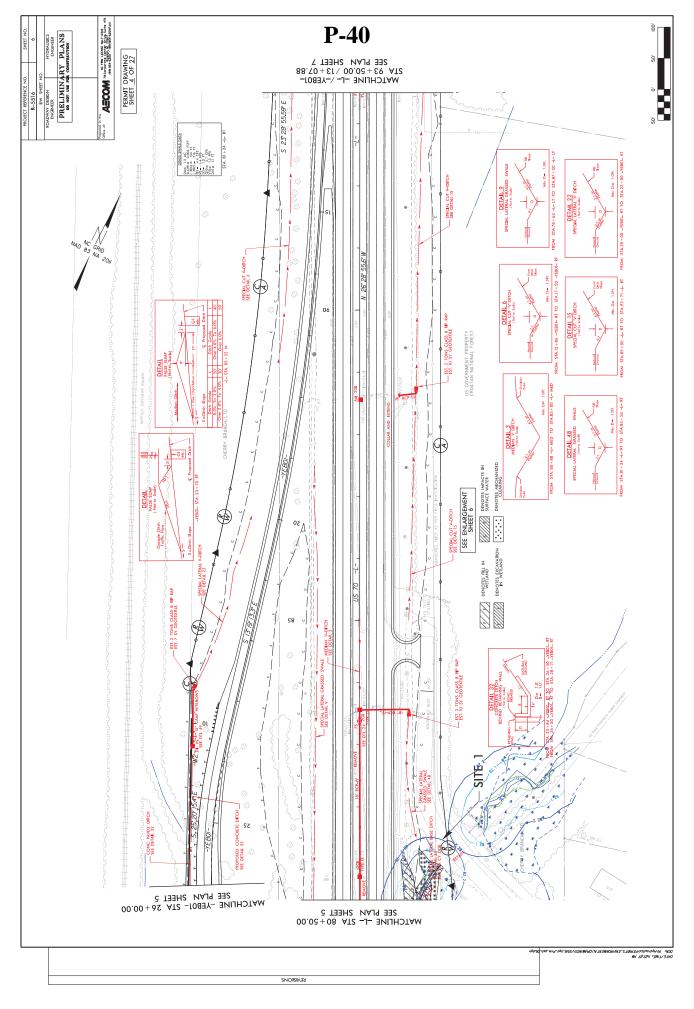
- * 6. The Director of the North Carolina Division of Water Resources may require submission of a formal application for Individual Certification for any project in this category of activity if it is determined that the project is likely to have a significant adverse effect upon water quality, including state or federally listed endangered or threatened aquatic species, or degrade the waters so that existing uses of the water or downstream waters are precluded.
 - Public hearings may be held prior to a Certification decision if deemed in the public's best interest by the Director of the North Carolina Division of Water Resources.

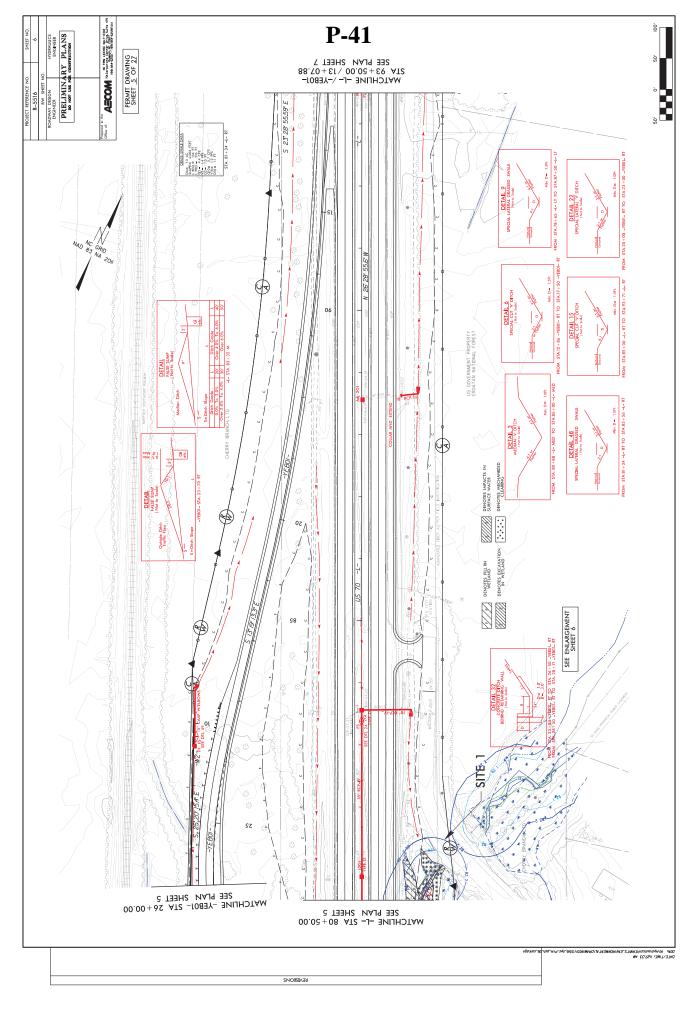
History Note: Water Quality Certification (WQC) Number 4088 issued March 3, 2017 replaces WQC 3886 issued March 12, 2012; WQC Number 3820 issued April 6, 2010; WQC Number 3627 issued March 2007; WQC Number 3404 issued March 2003; WQC Number 3375 issued March 18, 2002; WQC Number 3289 issued June 1, 2000; WQC Number 3103 issued February 11, 1997; WQC Number 2732 issued May 1, 1992; WQC Number 2666 issued January 21, 1992; WQC Number 2177 issued November 5, 1987.

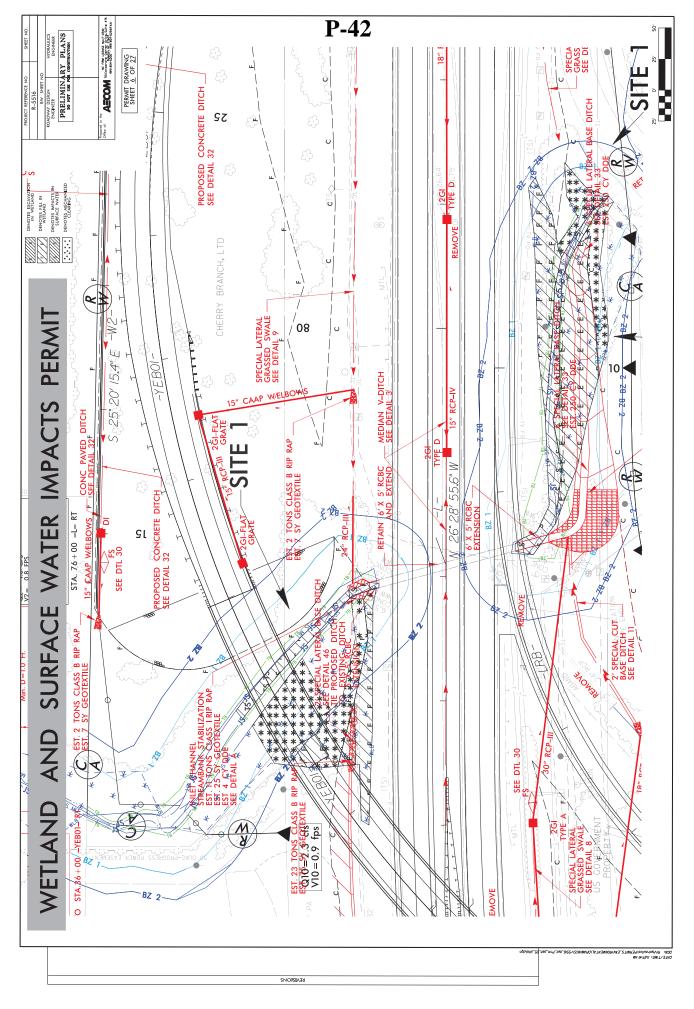




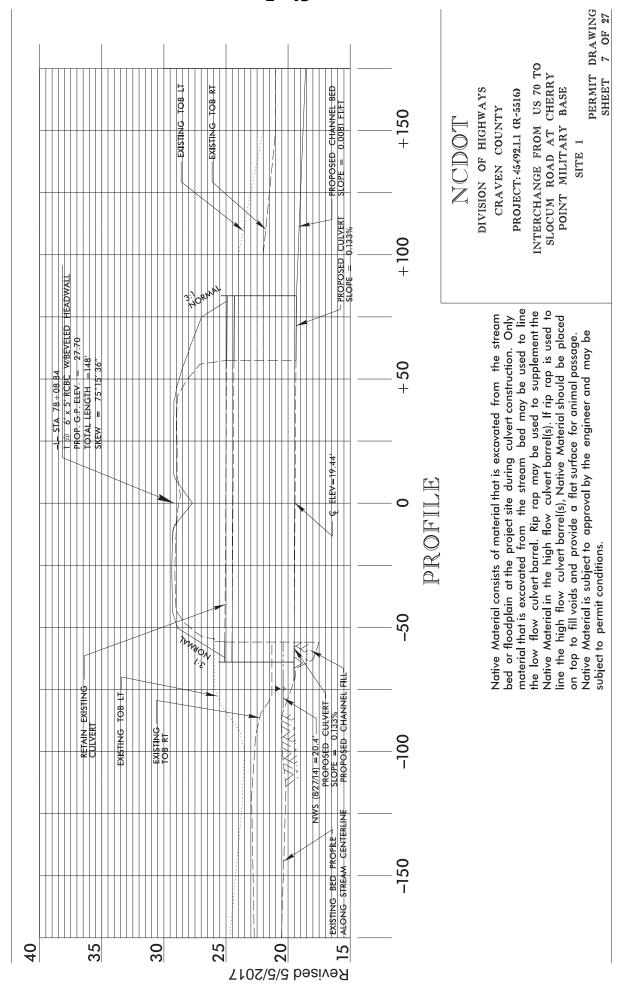


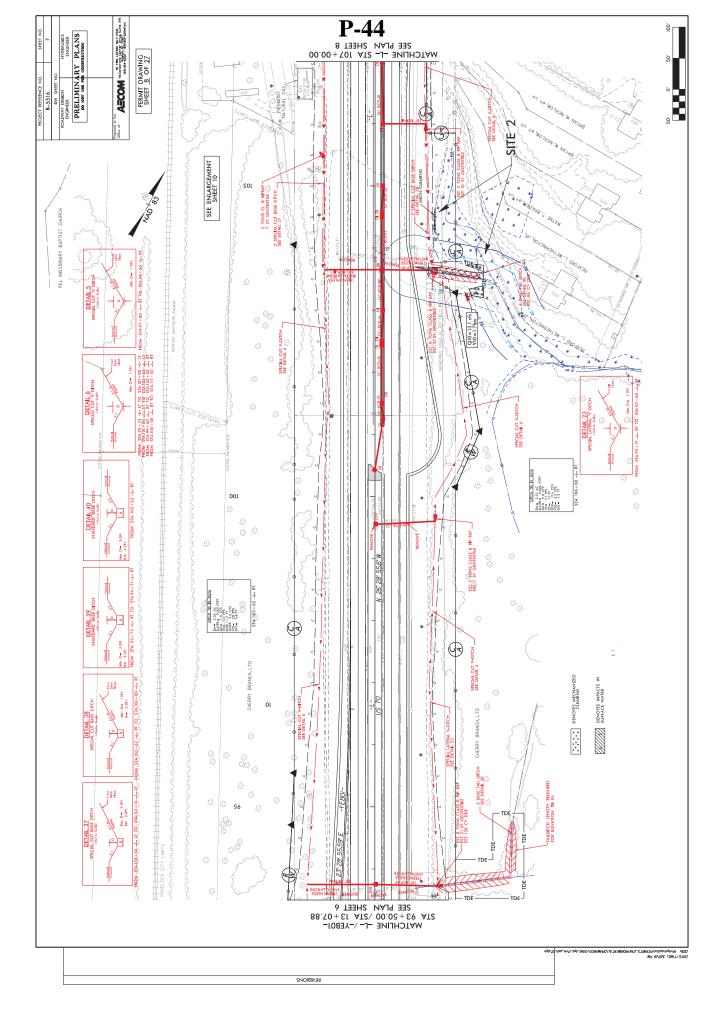


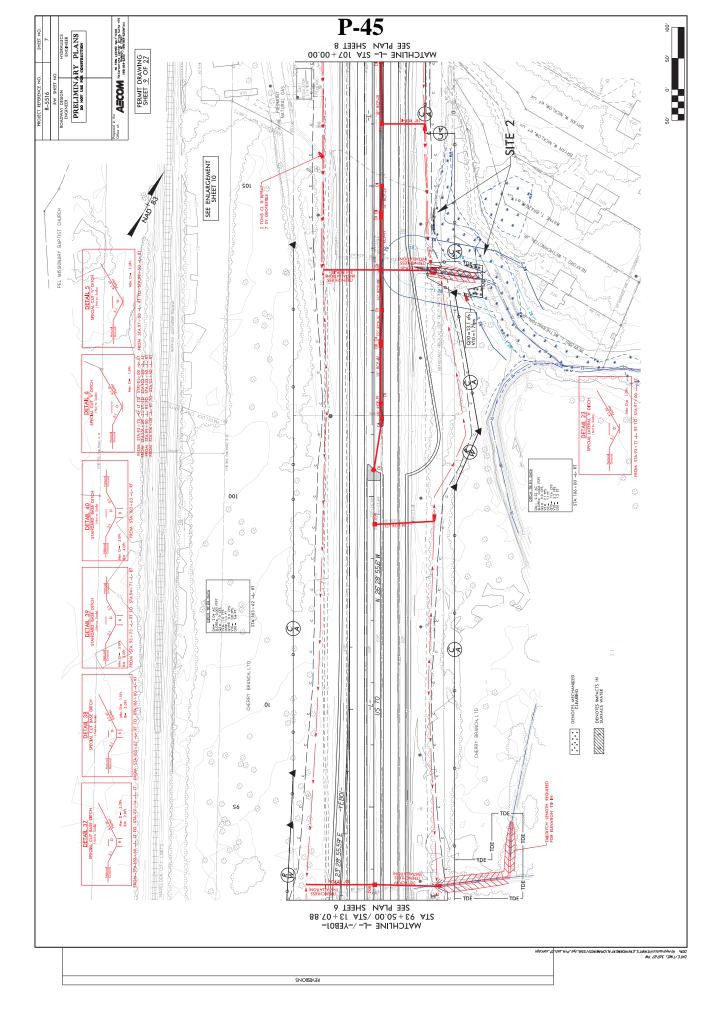


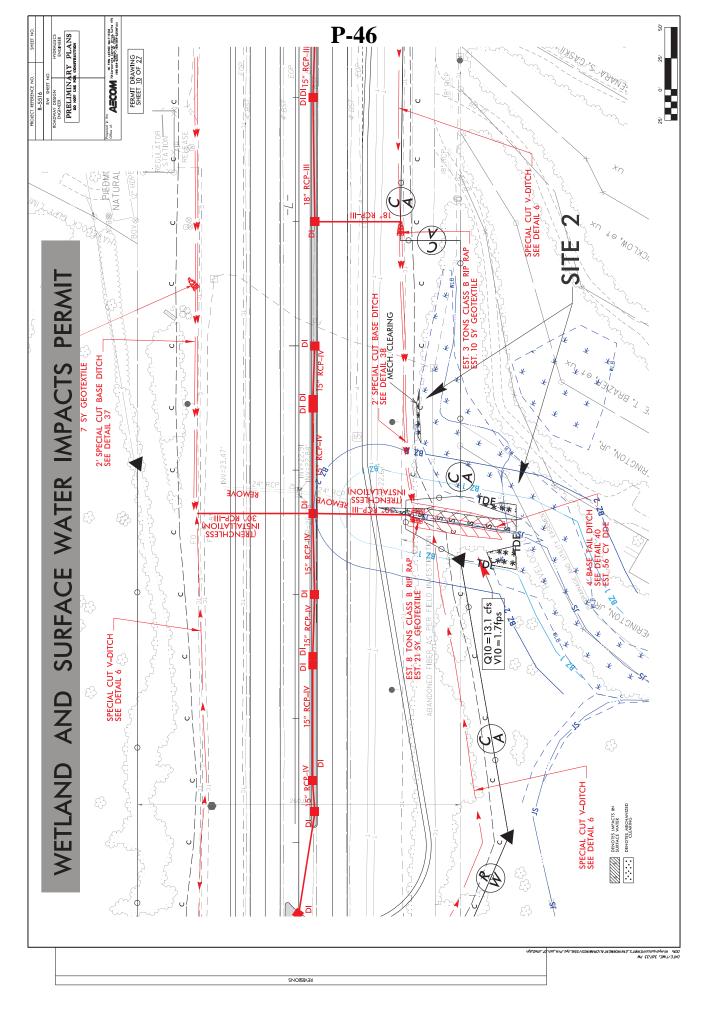


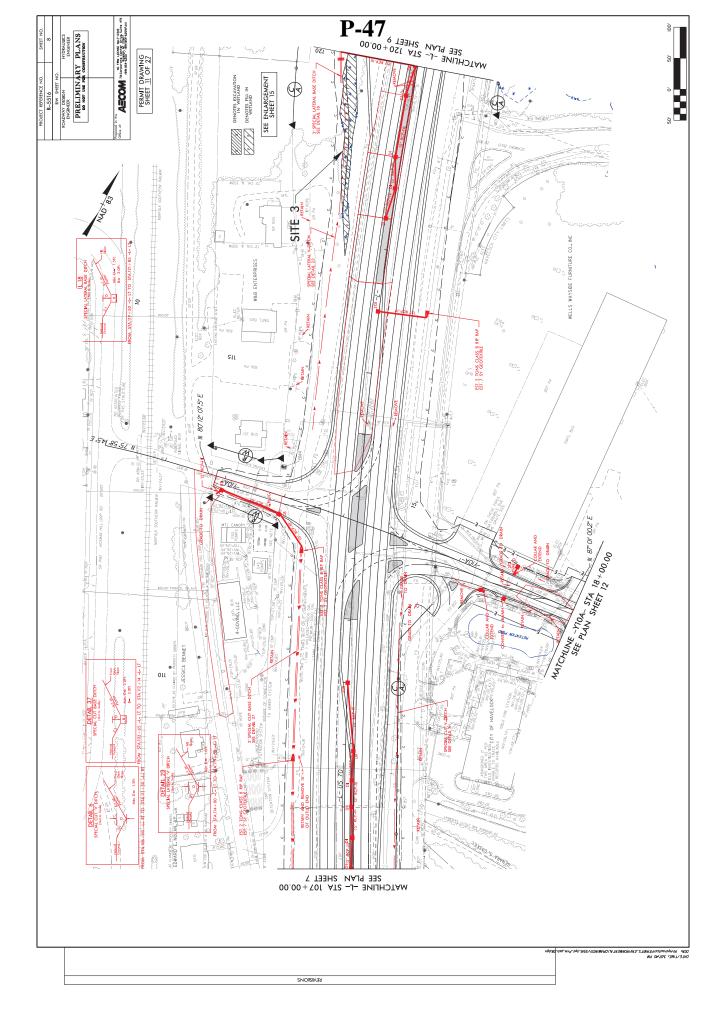
- PROFILE VIEW ALONG STRUCTURE SITE

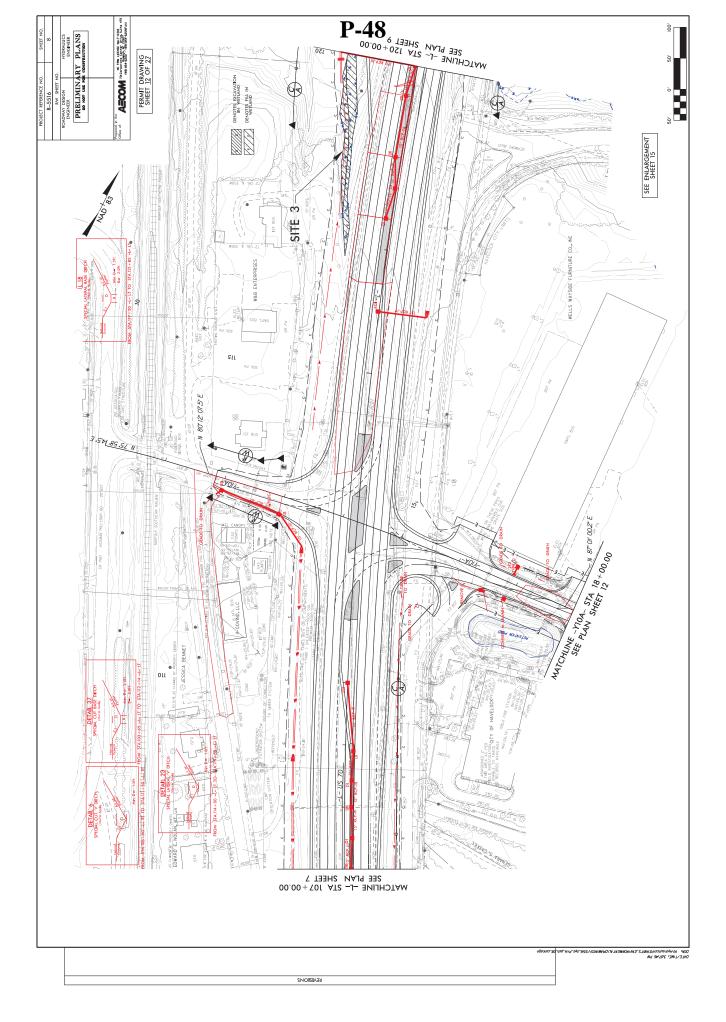


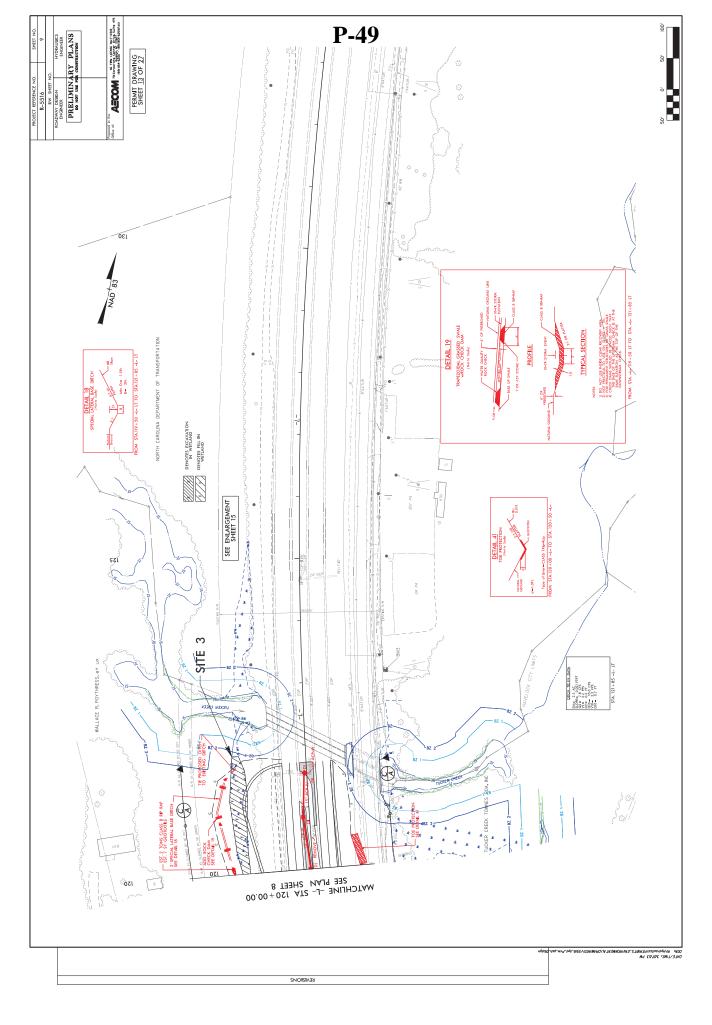




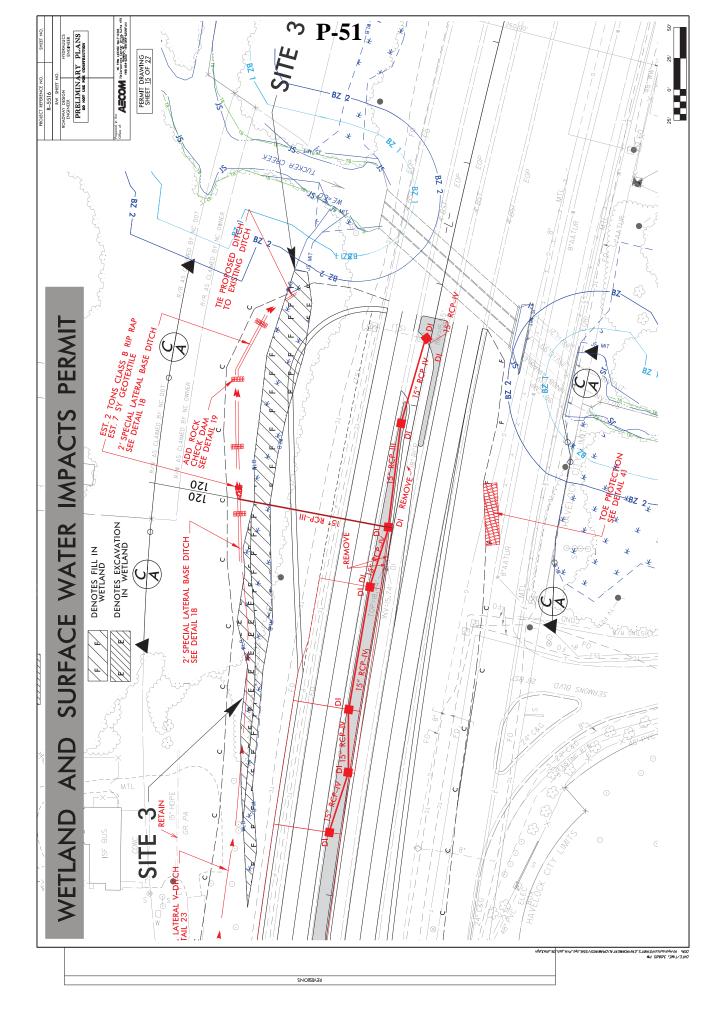


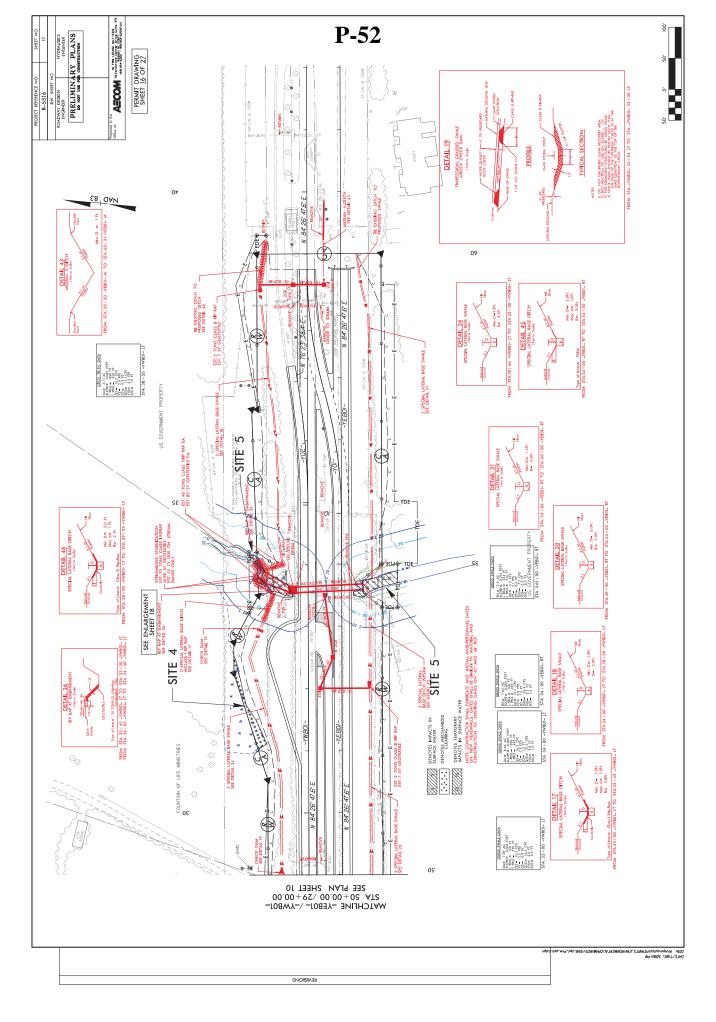


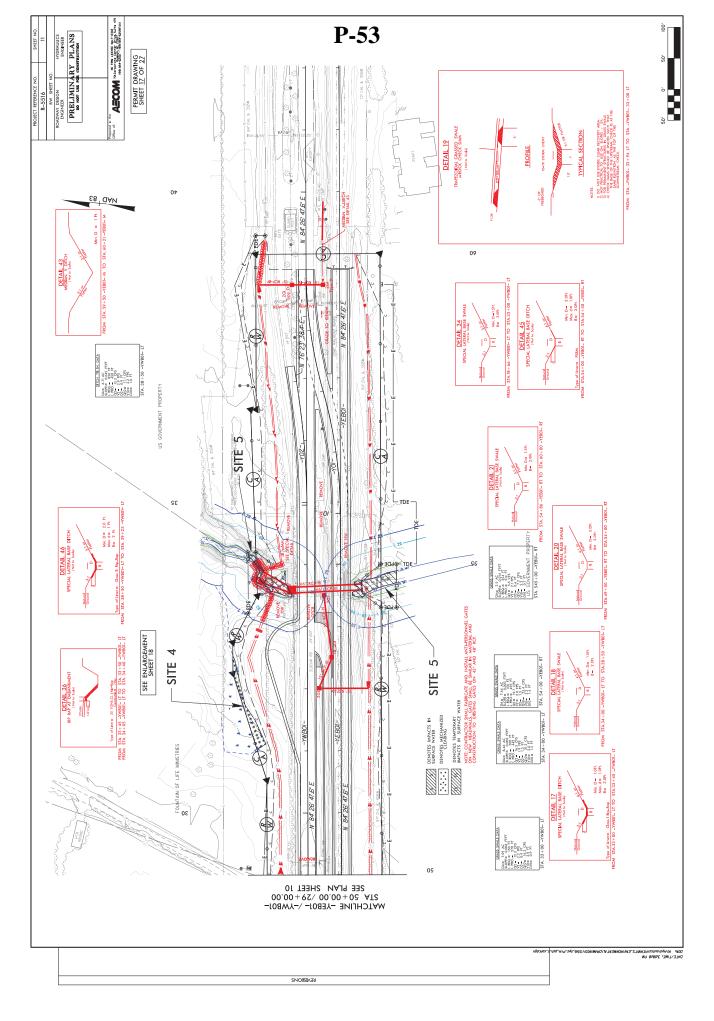


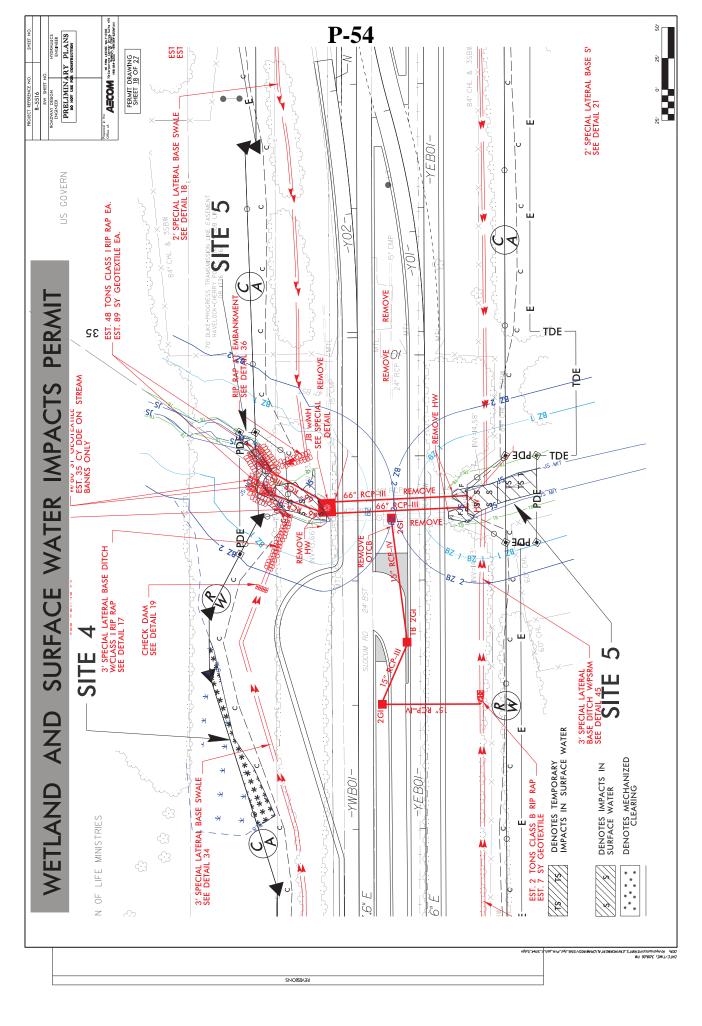




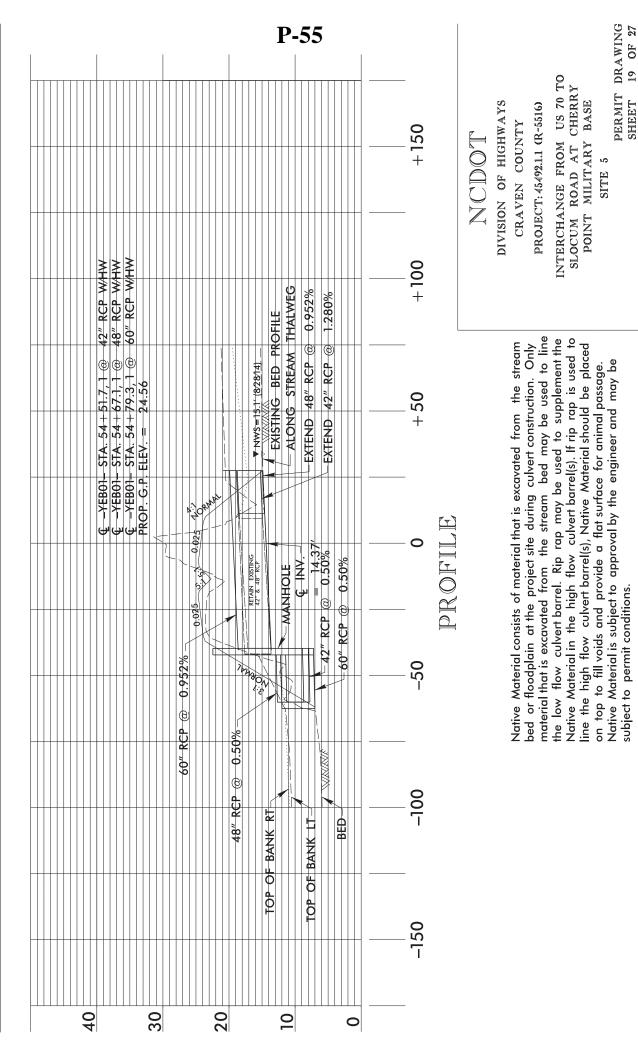


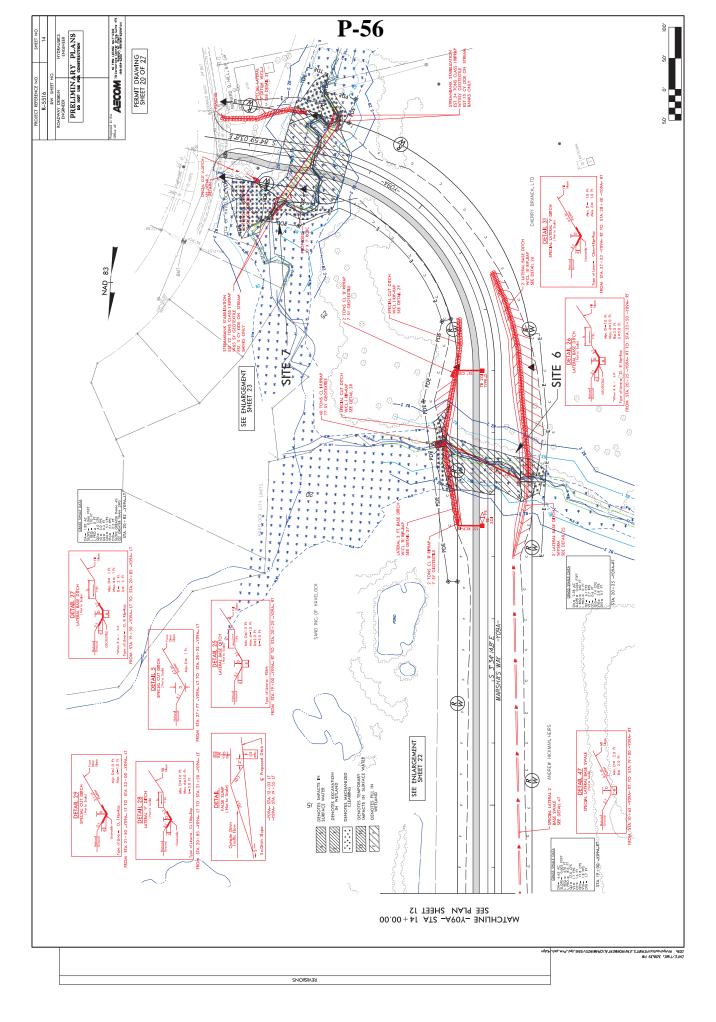


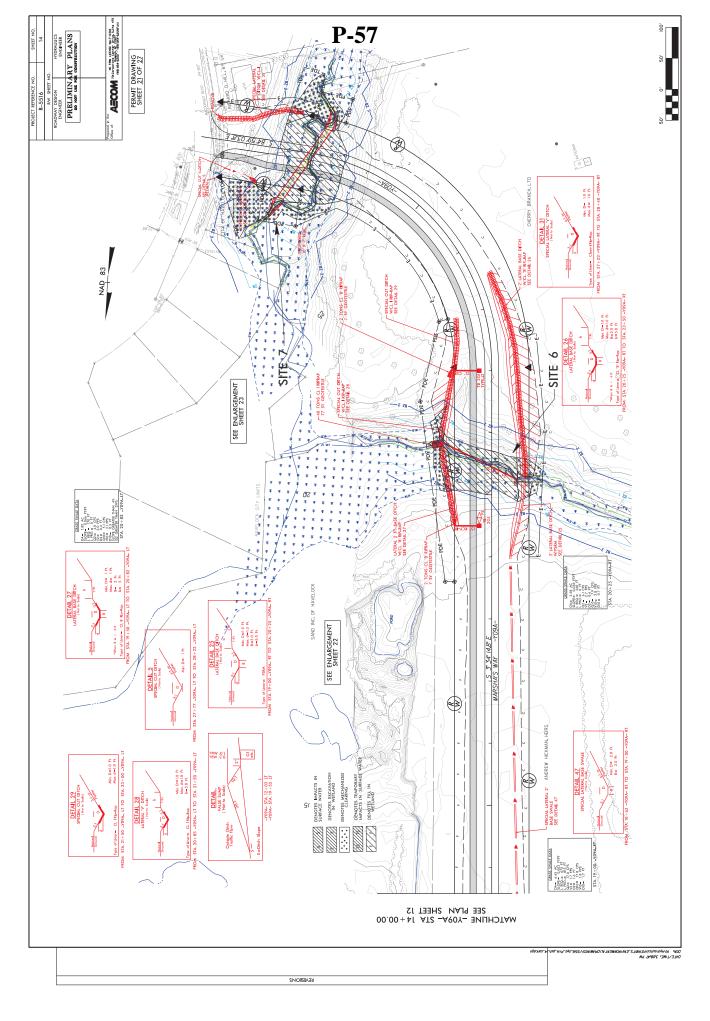


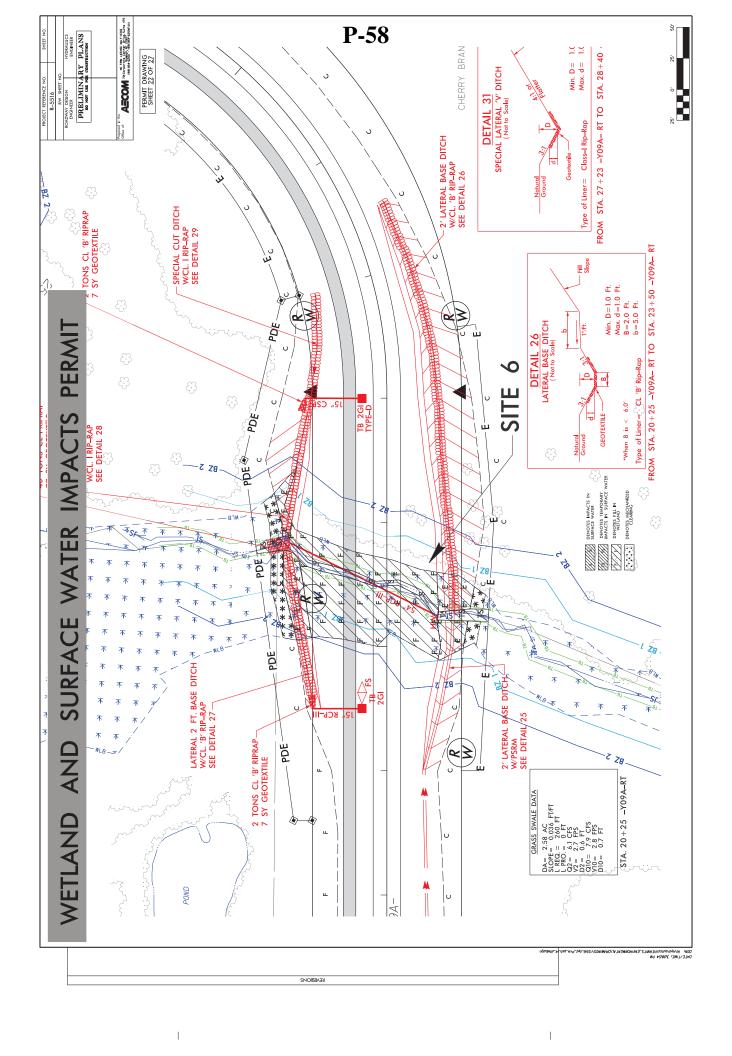


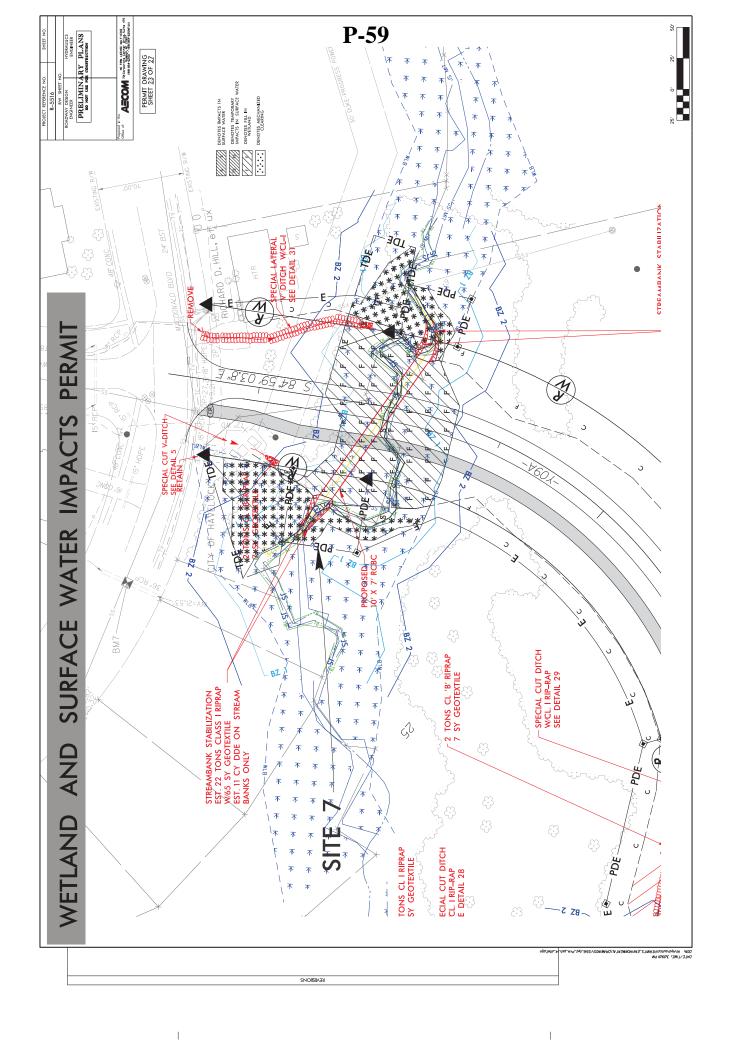
5 - PROFILE VIEW ALONG STRUCTURE SITE



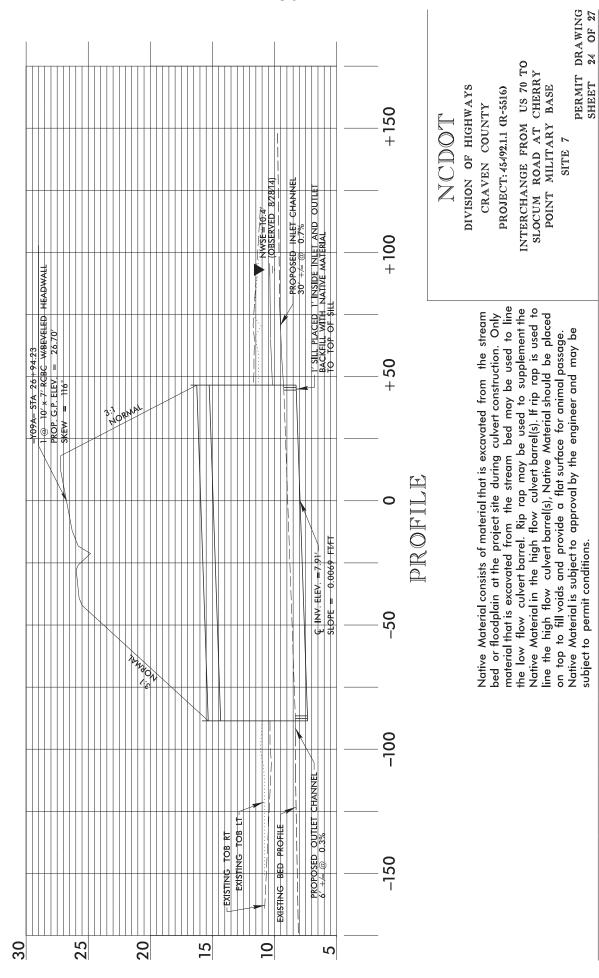


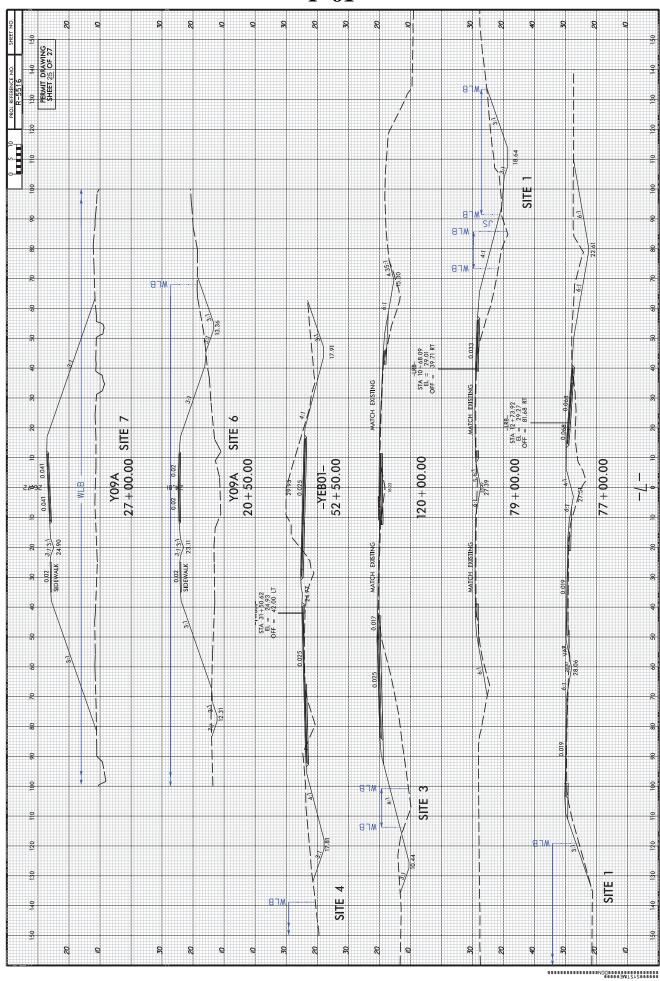






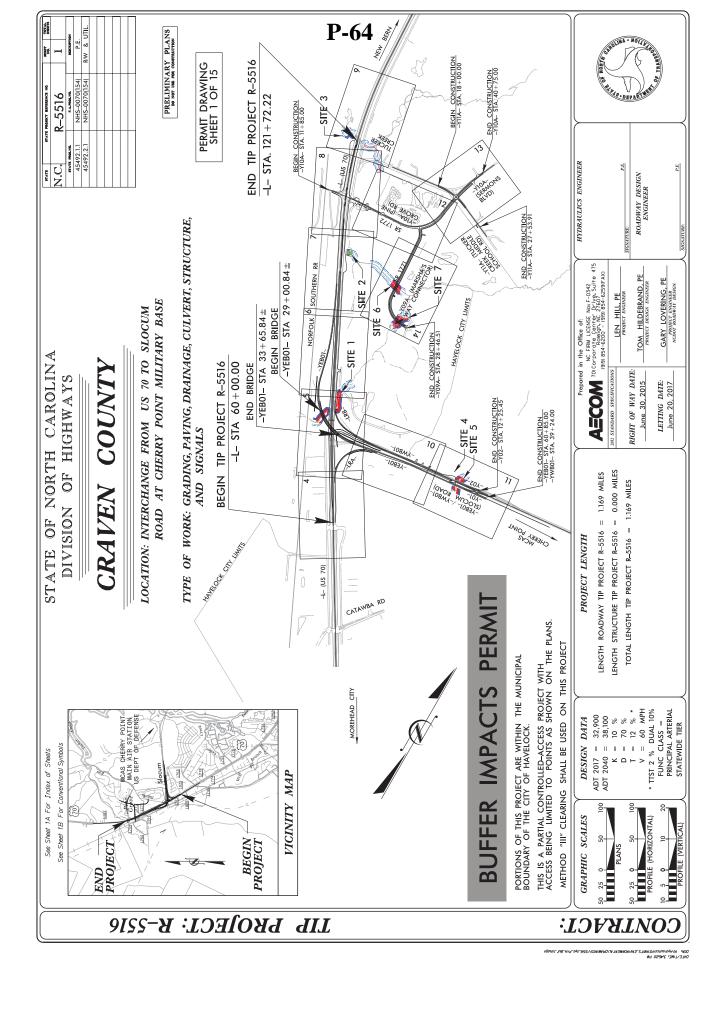
PROFILE VIEW ALONG STRUCTURE I SITE 7

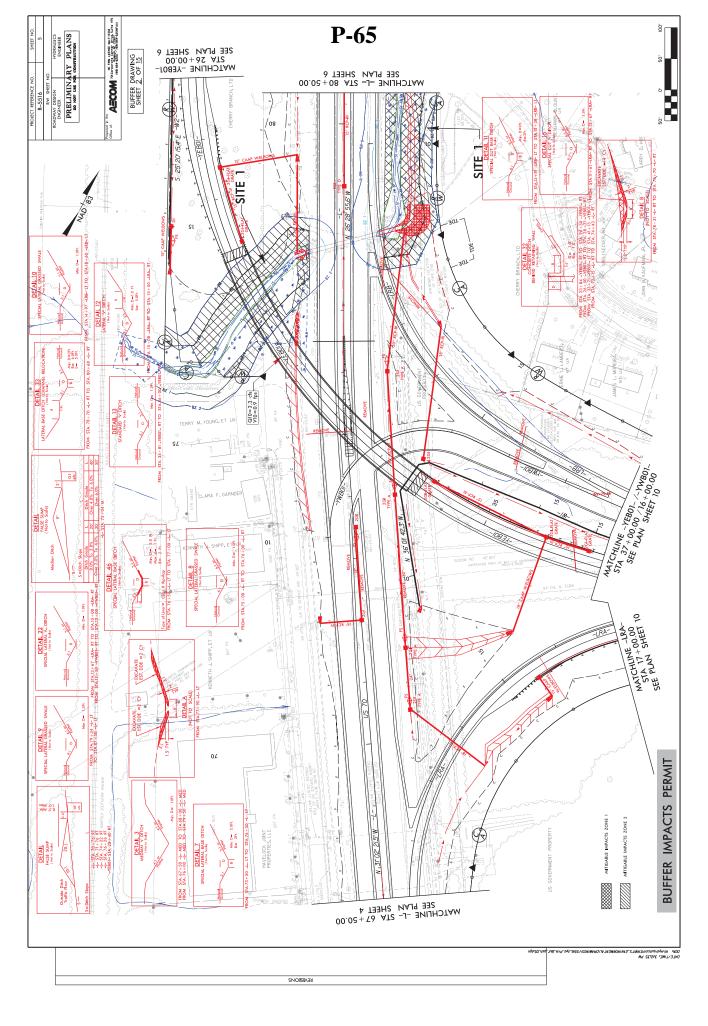


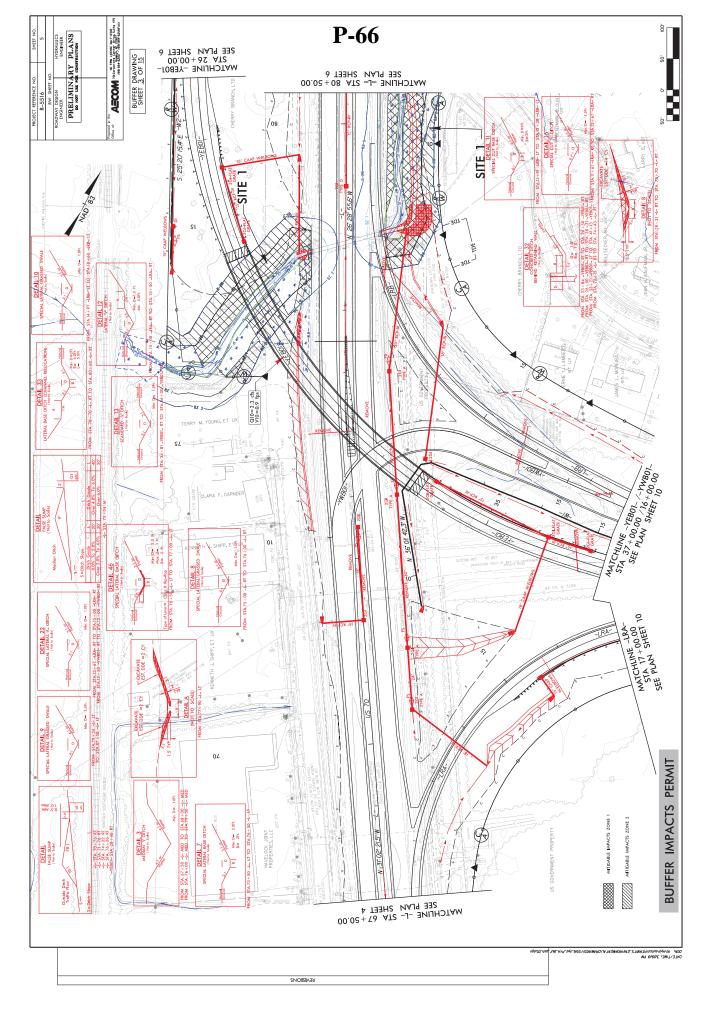


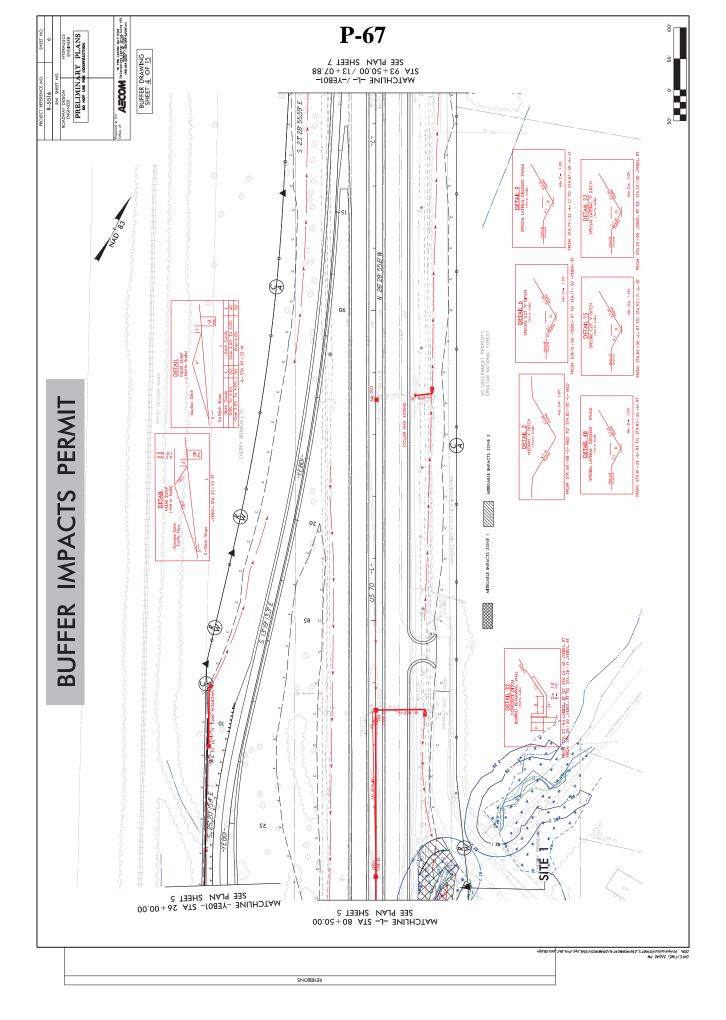
| | | | | WET | WETLAND PER WETLAND IMPACTS | WETLAND PERMIT IMPACT SUMMARY TLAND IMPACTS | ACT SUN | IMARY | SURFAC | SURFACE WATER IMPACTS | APACTS | |
|----------------|---|----------------------------|----------------------------------|------------------------------|--------------------------------|---|------------------------------------|----------------------------|------------------------|---|---|-----------------------------|
| Site No. | Station (From/To) | Structure Size / Type | Permanent Fill In Wetlands | Temp. Fill In Wetlands | Excavation in Wetlands | Excavation Mechanized in Clearing Wetlands in Wetlands (ac) | Hand Clearing in Wetlands | Permanent SW impacts | Temp. SW impacts | Existing Channel Impacts Permanent | Existing Channel Impacts Temp. (#) | Natural Stream Design |
| - | 76+47 to 76+73 -L- | Bridge Construction | < 0.01 | | | | | () | () | (-) | (-) | |
| - | 76+47 to 77+89 -L- | Bridge Construction | | | | 0.11 | | | | | | |
| ~ | 76+02 to 77+91 -L- | Roadway Fill | 0.04 | | | | | | | | | |
| - | 76+49 to 77+00 -L- | Roadway Fill | | | < 0.01 | | | | | | | |
| - | 77+10 to 77+97 -L- | 6'x5' RCBC Extend (Stream) | | | | | | < 0.01 | 0.02 | 26 | 132 | |
| - | 79+28 to 81+21 -L- | Roadway Fill | 0.05 | | | | | | | | | |
| _ | 78+66 to 80+74 -L- | Channel Change | | | 0.11 | | | | | | | |
| ~ | 79+60 to 81+33 -L- | | | | | 0.05 | | | | | | |
| - | 78+18 to 81+06 -L- | 6'x5' RCBC Extend (Stream) | | | | | | 0.05 | | 303 | | |
| 2 | 104+22 to 104+65 -L- | Roadway Excavation | | | | 0.01 | | | | | | |
| 2 | 103+20 to 103+72 -L- | Proposed Ditch | | | | 0.01 | | 0.02 | | 111 | | |
| | | | | | | | | | | | | |
| c | 100.000 | | | | 20 | | | | | | | |
| 0 0 | 440:00 to 404:07 1 | Roadway Excavation | 07.0 | | 0.04 | | | | | | | |
| 0 | -1-0+00 to 121+07-F- | Noadway FIII | 0.10 | | | | | | | | | |
| 4 | 31+02 to 32+55 - YWB01- | - Roadway Excavation | | | | 0.03 | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| TOTALS*: | S*: | | 0.26 | | 0.16 | 0.21 | | 0.07 | 0.02 | 440 | 132 | 0 |
| puna | *Rounded totals are sum of actual impacts | mpacts | | | | | | | | | | |
| TES: e pagé | NOTES: See page 27 for full totals | | | | | | | | NC DI | NC DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS | ARTMENT OF TRANSPOR DIVISION OF HIGHWAYS | RTATION |
| | | | | | | | | | | 10/4 CR R- | 10/4/2016 CRAVEN R-5516 | |
| | | | | | | | | | | WBS-4 | WBS-45492.1.1 | |

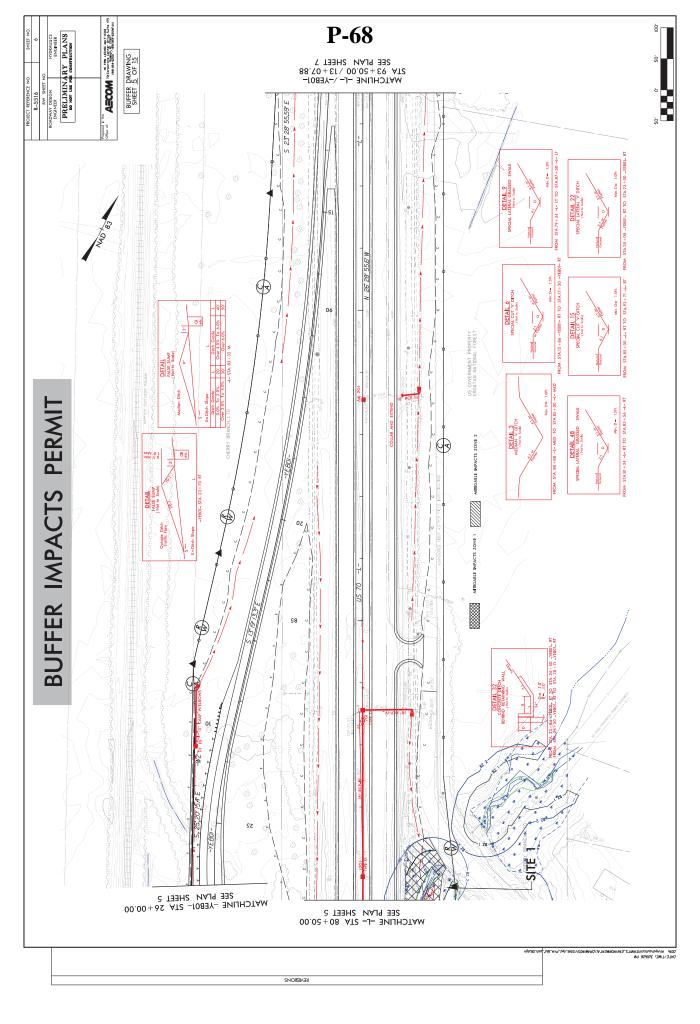
| | | | | WET | WETLAND PER WETLAND IMPACTS | WETLAND PERMIT IMPACT SUMMARY ILAND IMPACTS | PACT SUN | IMARY | SURFA | SURFACE WATER IMPACTS | APACTS | |
|-------------|---|--------------------------|----------------------------------|------------------------------|--------------------------------|--|------------------------------------|----------------------------|------------------------|---|---|-----------------------------|
| Site No. | Station (From/To) | Structure Size / Type | Permanent Fill In Wetlands | Temp. Fill In Wetlands | Excavation in Wetlands | Excavation Mechanized in Clearing Wetlands in Wetlands | Hand Clearing in Wetlands | Permanent SW impacts | Temp. SW impacts | Existing Channel Impacts Permanent | Existing Channel Impacts Temp. | Natural Stream Design |
| 2 | 36+46 to 33+90 -YWB01- | (2) 66" RCP (Uostream) | (ac) | (90) | (90) | (90) | (90) | (ac) | (ac) 0.01 | (11) | 32 | (11) |
| 2 | 33+48 to 34+16 -WYB01- | | | | | | | 0.03 | < 0.01 | 96 | 15 | |
| 9 | 19+87 to 21+44 -Y09A- | 54" RCP (Stream) | | | | | | 0.02 | | 166 | | |
| 9 | 20+66 to 20+85 -Y09A- | Bank Stabilization | | | | | | | < 0.01 | | 10 | |
| 9 | 20+21 to 20+30 -Y09A- | Roadway | | | | | | | < 0.01 | | 41 | |
| 9 | 19+87 to 21+44 -Y09A- | Roadway | 0.16 | | 90.0 | 0.03 | | | | | | |
| 7 | 26+39 to 27+96 -Y09A- | Roadway SS | 0.28 | | 0.01 | 0.20 | | | | | | |
| 7 | 26+39 to 27+96 -Y09A- | 10'x7' RCBC (Stream) | | | | | | 0.03 | | 311 | | |
| 7 | 26+39 to 27+96 -Y09A- | Bank Stabilization | | | | | | | < 0.01 | | 18 | |
| 7 | 26+39 to 27+96 -Y09A- | Bank Stabilization | | | | | | | < 0.01 | | 25 | |
| | | | | | | | | | | | | |
| N/A | Sheet 26 Totals | | 0.26 | | 0.16 | 0.21 | | 0.07 | 0.02 | 440 | 132 | |
| TOTALS*: | | | 0.70 | | 0.23 | 0.44 | | 0.16 | 0.05 | 1054 | 273 | 0 |
| nnde | *Rounded totals are sum of actual impacts | npacts | | | | | | | | | | |
| NOTES: | | | | | | | | | NC DI | NC DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS | ARTMENT OF TRANSPOR DIVISION OF HIGHWAYS | RTATIOI 3 |
| | | | | | | | | | | 1/5 CR R- | 1/5/2017 CRAVEN R-5516 | |
| 000 | | | | | | | | | E C | WBS-4 | WBS-45492.1.1 | 2 |

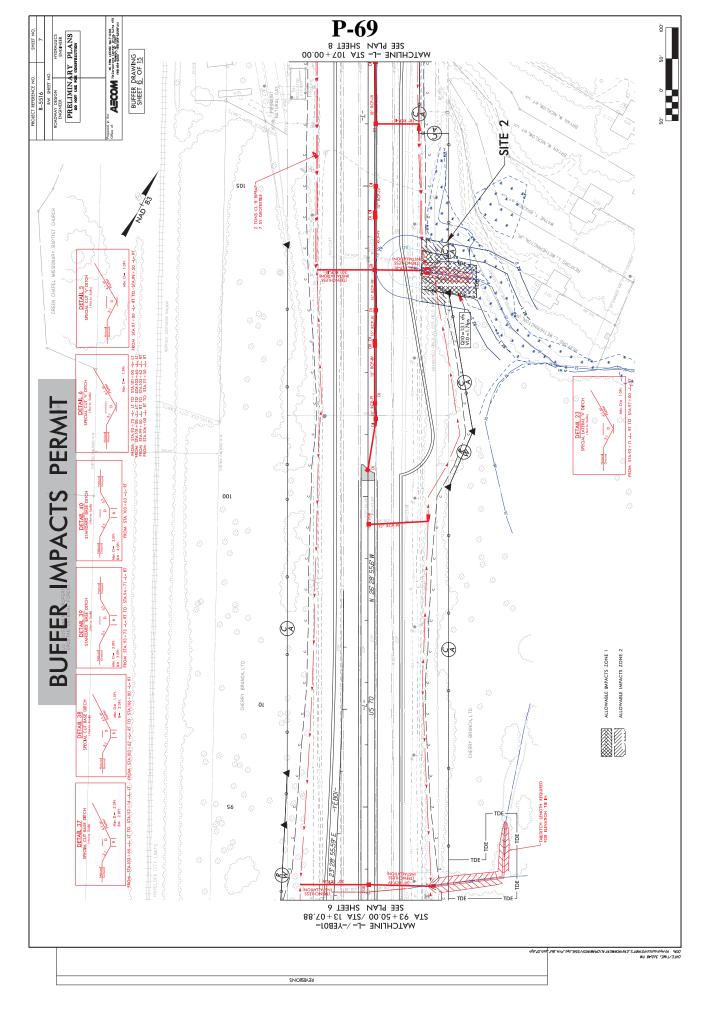


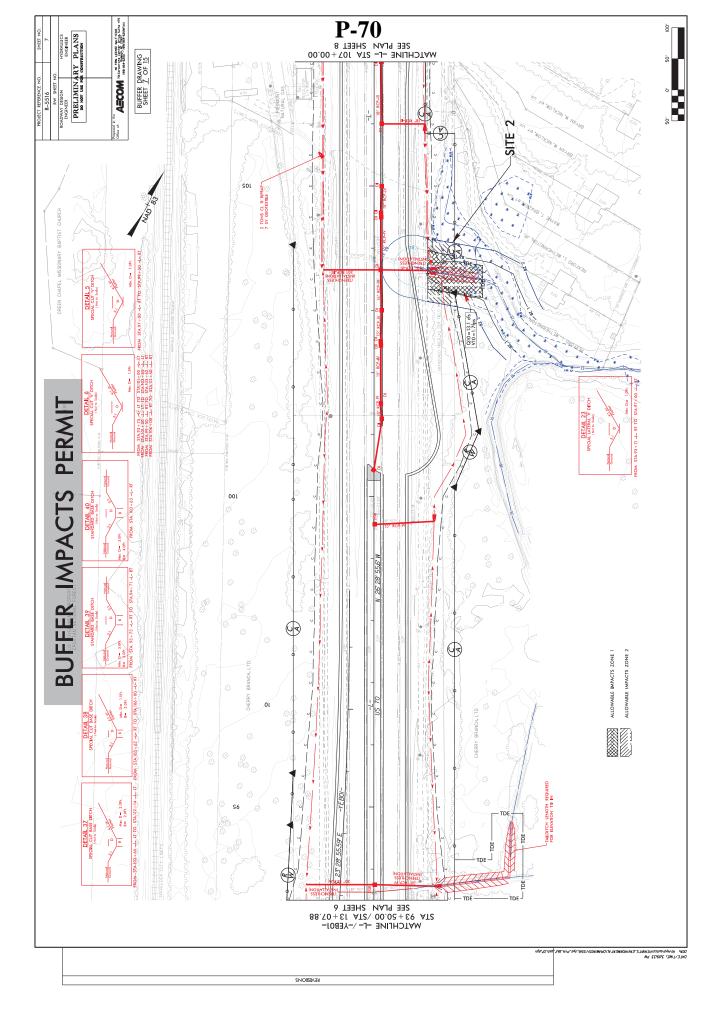


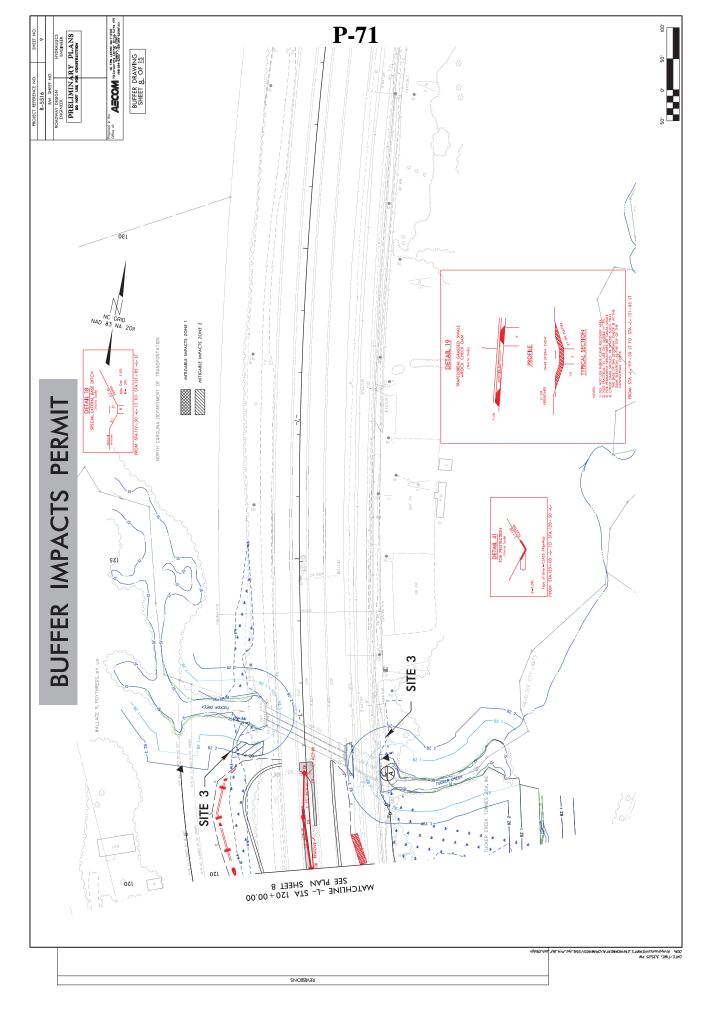


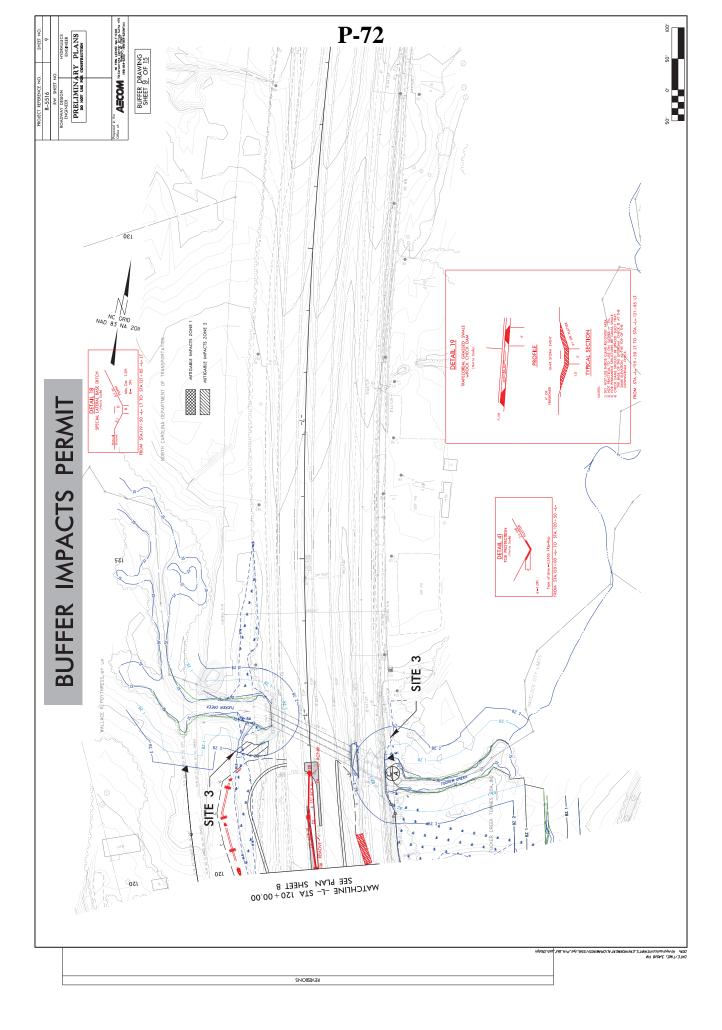


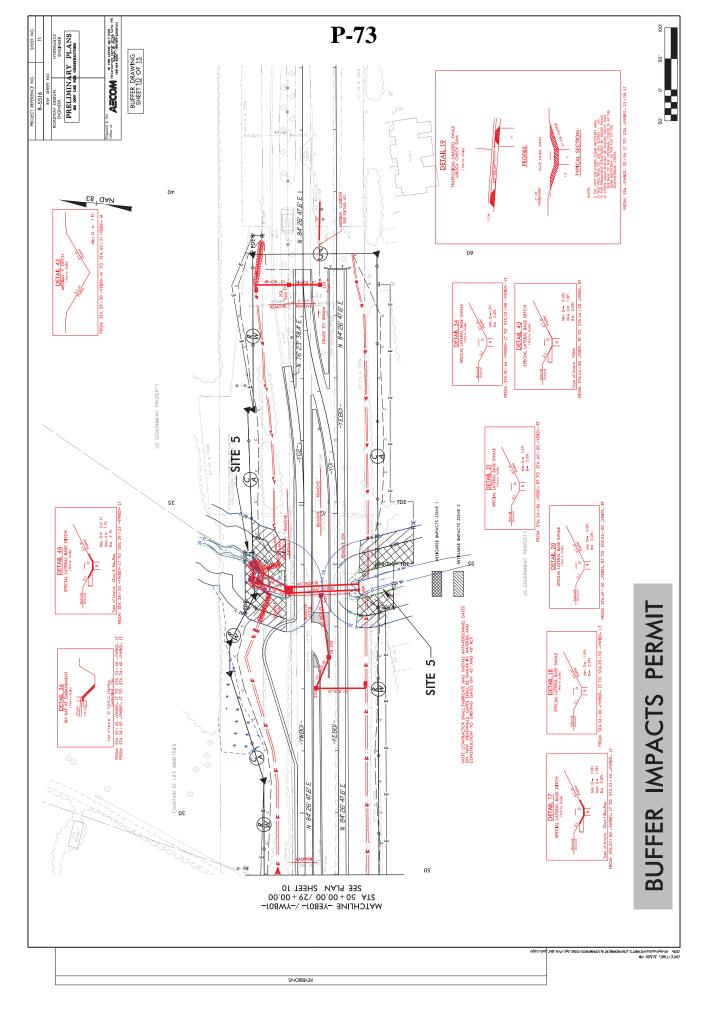


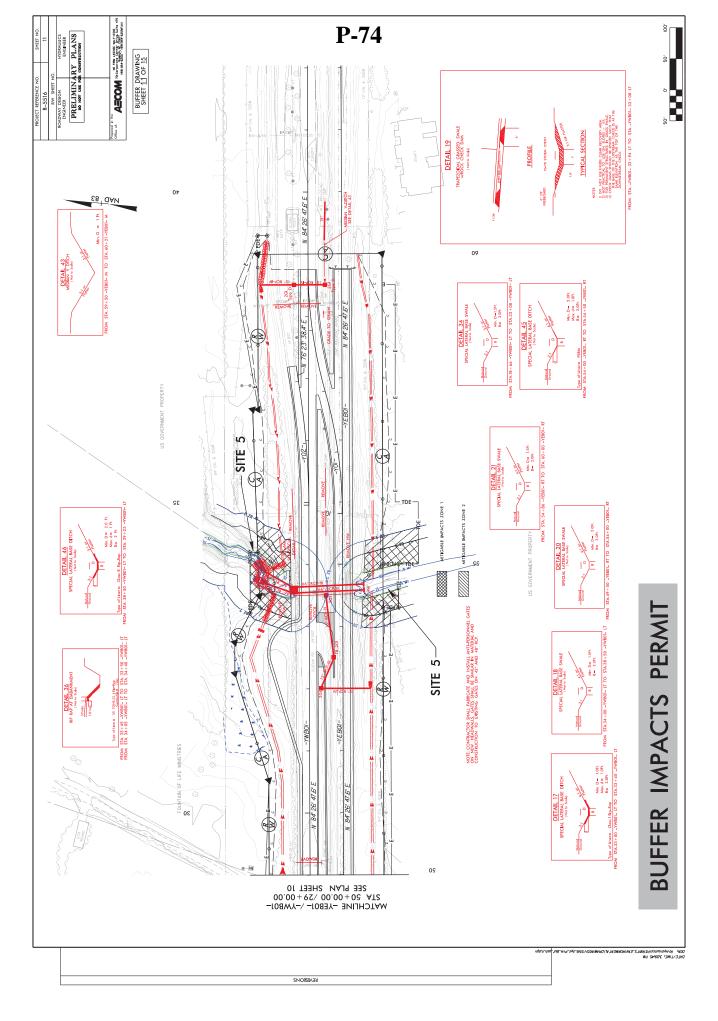


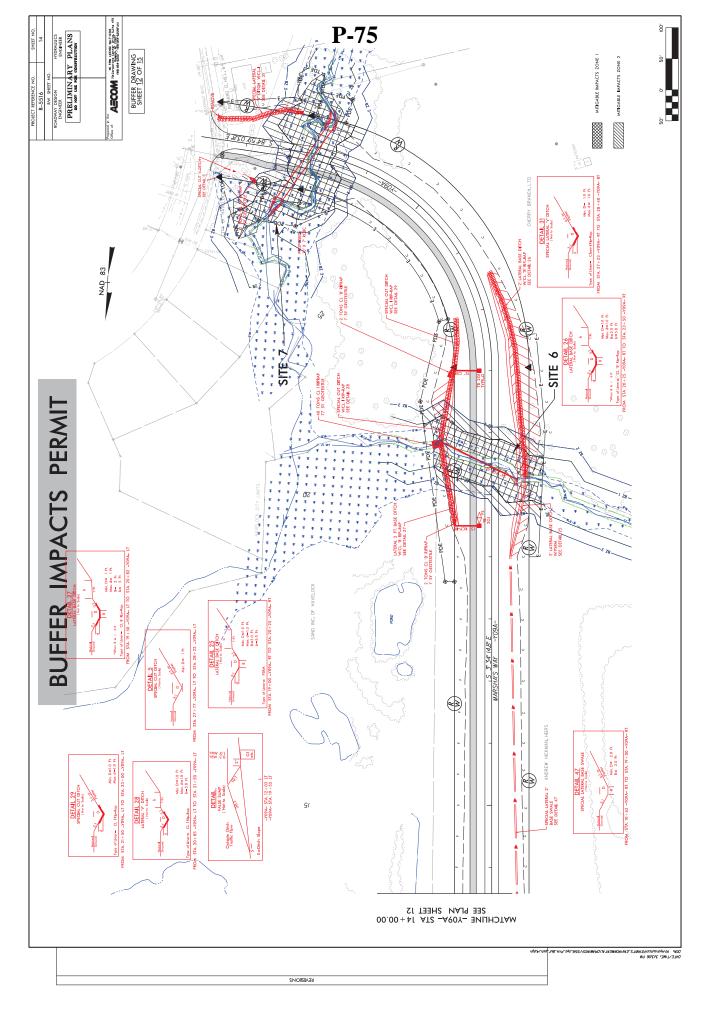


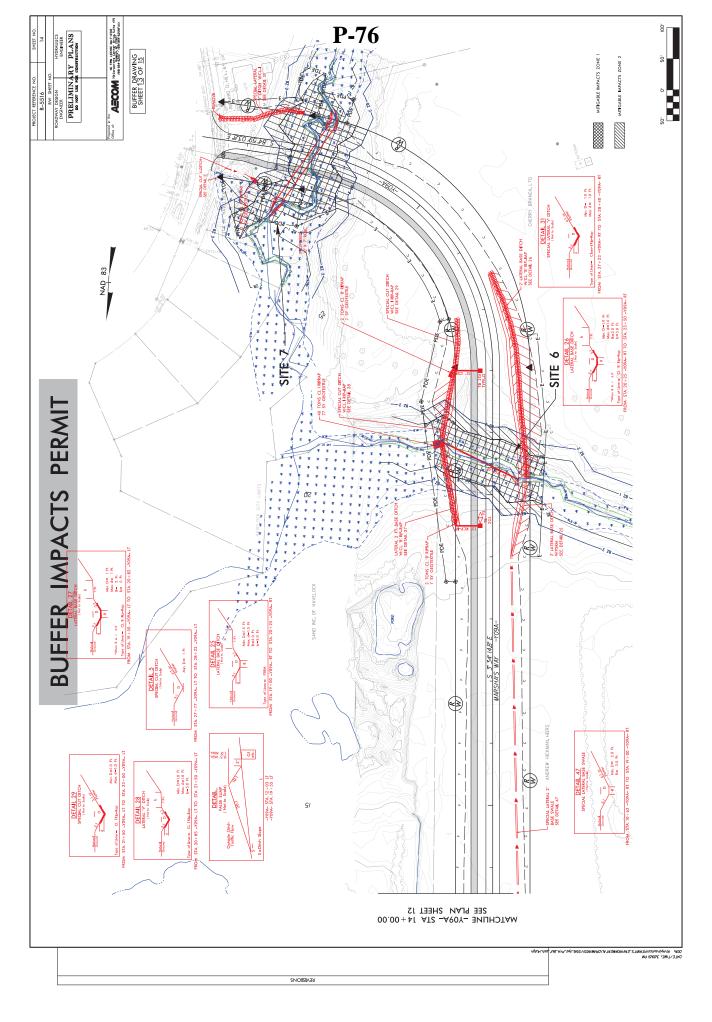












| | | | BU | FFER | BUFFER IMPACTS SUMMARY | TS SI | MMV | \RY | | | | | |
|----------|--------------------------|----------------------|------------------|--------|------------------------|-----------------|-----------------|-------------|-----------------|-----------------|-------------------------|--|--------------|
| | | | | | | | IMPACT | | | | | BUF | BUFFER |
| | | | | TYPE | | AL | ALLOWABLE | Э | | MITIGABLE | E. | REPLAC | REPLACEMENT |
| SITE NO. | STRUCTURE SIZE / TYPE | STATION (FROM/TO) | ROAD CROSSING | BRIDGE | PARALLEL IMPACT | ZONE 1 (ft²) | ZONE 2 (ft²) | TOTAL (ft²) | ZONE 1 (ft²) | ZONE 2 (ft²) | TOTAL (ft²) | ZONE 1 (ft²) | ZONE 2 (ft²) |
| 7 | 6'x5' RCBC | -L- Sta. 75+97 | × | | | | | | 25351 | 15896 | 41247 | | |
| | | -L- Sta. 81+50 | | | | | | | | | | | |
| 2 | Proposed Tail Ditch | -L- Sta. 103+00 | × | | | 4990.0 | 1804.0 | 6794.0 | | | | | |
| | | -L- Sta. 104+0 | | | | | | | | | | | |
| 3 | Proposed Roadway | -L- Sta. 120+64 | × | | | | | | | 874 | 874 | | |
| | | -L- Sta. 122+23 | | | | | | | | | | | |
| 5 | (2) 66" RCP | -YWBO1- Sta. 32+90 | × | | | | | | 9538 | 5519 | 15057 | | |
| | | -YWBO1- Sta. 34+50 | | | | | | | | | | | |
| 9 | 54" RCP | -Y09A- Sta. 20+00 | × | | | | | | 11717 | 8272 | 19989 | | |
| | | -Y09A- Sta. 21+50 | | | | | | | | | | | |
| 7 | 10'x7' RCBC | -Y09A- Sta. 26+15 | × | | | | | | 18155 | 8105 | 26658 | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| TOTAL: | | | | | | 4990.0 | 1804.0 | 6794.0 | 58597 | 39777 | 103825 | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | Z | C. DEPT. OF DIVISION | N.C. DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS | ATION S |
| | | | | | | | | | | | CRAVE PROJECT: 4 | CRAVEN COUNTY PROJECT: 45492.1.1 (R-5516) | 516) |
| | | | | | | | | | | | | | |
| | | | | | | | | | | • | 2/ SHEET 14 | 2/6/2017 4 OF 15 | |
| | | | | | | | | | | | | | |

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|--------------|----------|--|---------------|-----------|--------|
| | | F | ROADWAY ITEMS | | | |
| | | | | | | |
| 0001 | 0000100000-N | 800 | MOBILIZATION | Lump Sum | L.S. | |
| 0002 | 0000400000-N | 801 | CONSTRUCTION SURVEYING | Lump Sum | L.S. | |
| 0003 | 0000700000-N | SP | FIELD OFFICE | Lump Sum | L.S. | |
| 0004 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ************************************ | Lump Sum | L.S. | |
| 0005 | 0036000000-E | 225 | UNDERCUT EXCAVATION | 22,600 CY | | |
| 0006 | 0043000000-N | 226 | GRADING | Lump Sum | L.S. | |
| 0007 | 0050000000-E | 226 | SUPPLEMENTARY CLEARING & GRUB- BING | 2 ACR | | |
| 0008 | 0134000000-E | 240 | DRAINAGE DITCH EXCAVATION | 2,900 CY | | |
| 0009 | 0192000000-N | 260 | PROOF ROLLING | 15 HR | | |
| 0010 | 0195000000-E | 265 | SELECT GRANULAR MATERIAL | 37,300 CY | | |
| 0011 | 0196000000-E | 270 | GEOTEXTILE FOR SOIL STABILIZA- TION | 70,000 SY | | |
| 0012 | 0199000000-E | SP | TEMPORARY SHORING | 780 SF | | |
| 0013 | 0318000000-Е | 300 | FOUNDATION CONDITIONING MATE- RIAL, MINOR STRUCTURES | 1,732 TON | | |
| 0014 | 0320000000-E | 300 | FOUNDATION CONDITIONING GEO- TEXTILE | 8,298 SY | | |
| 0015 | 0342000000-E | 310 | **" SIDE DRAIN PIPE (30") | 244 LF | | |
| 0016 | 0343000000-E | 310 | 15" SIDE DRAIN PIPE | 132 LF | | |
| 0017 | 0344000000-E | 310 | 18" SIDE DRAIN PIPE | 148 LF | | |
| 0018 | 0345000000-E | 310 | 24" SIDE DRAIN PIPE | 244 LF | | |
| 0019 | 0366000000-E | 310 | 15" RC PIPE CULVERTS, CLASS | 1,192 LF | | |

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|--------------|----------|---|-------------|-----------|--------|
| | | | | | | |
| 0020 | 0372000000-Е | 310 | 18" RC PIPE CULVERTS, CLASS III | 644 LF | | |
| 0021 | 0378000000-E | 310 | 24" RC PIPE CULVERTS, CLASS III | 140 LF | | |
| 0022 | 0384000000-E | 310 | 30" RC PIPE CULVERTS, CLASS III | 428 LF | | |
| 0023 | 0408000000-E | 310 | 54" RC PIPE CULVERTS, CLASS III | 136 LF | | |
| 0024 | 0420000000-E | 310 | 66" RC PIPE CULVERTS, CLASS | 320 LF | | |
| 0025 | 0448200000-E | 310 | 15" RC PIPE CULVERTS, CLASS IV | 1,724 LF | | |
| 0026 | 0448300000-E | 310 | 18" RC PIPE CULVERTS, CLASS IV | 1,128 LF | | |
| 0027 | 0448400000-E | 310 | 24" RC PIPE CULVERTS, CLASS IV | 100 LF | | |
| 0028 | 0448500000-E | 310 | 30" RC PIPE CULVERTS, CLASS IV | 96 LF | | |
| 0029 | 0546000000-E | 310 | **" CAA PIPE CULVERTS, *****" THICK (15", 0.064") | 412 LF | | |
| 0030 | 0546000000-E | 310 | **" CAA PIPE CULVERTS, *****" THICK (18", 0.064") | 160 LF | | |
| 0031 | 0564000000-E | 310 | **" CAA PIPE ELBOWS, *****" THICK (15", 0.064") | 10 EA | | |
| 0032 | 0564000000-E | 310 | **" CAA PIPE ELBOWS, *****" THICK (18", 0.064") | 2 EA | | |
| 0033 | 0973100000-Е | 330 | **" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (18", 0.5") | 80 LF | | |
| 0034 | 0973100000-E | 330 | **" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (30", 0.5") | 380 LF | | |
| 0035 | 0995000000-E | 340 | PIPE REMOVAL | 2,803 LF | | |

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|--------------|----------|--|----------------|-----------|--------|
| | | | | | | |
| 0036 | 1077000000-E | SP | #57 STONE | 5 TON | | |
| 0037 | 1099500000-E | 505 | SHALLOW UNDERCUT | 10,520 CY | | |
| 0038 | 1099700000-E | 505 | CLASS IV SUBGRADE STABILIZA- TION | 20,300 TON | | |
| 0039 | 1111000000-E | SP | CLASS IV AGGREGATE STABILIZA- TION | 6,750 TON | | |
| 0040 | 1121000000-E | 520 | AGGREGATE BASE COURSE | 3,354 TON | | |
| 0041 | 1220000000-E | 545 | INCIDENTAL STONE BASE | 200 TON | | |
| 0042 | 1275000000-E | 600 | PRIME COAT | 1,048.6 GAL | | |
| 0043 | 1489000000-E | 610 | ASPHALT CONC BASE COURSE, TYPE B25.0B | 5,090 TON | | |
| 0044 | 1491000000-E | 610 | ASPHALT CONC BASE COURSE, TYPE B25.0C | 11,620 TON | | |
| 0045 | 1498000000-E | 610 | ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B | 1,380 TON | | |
| 0046 | 1503000000-E | 610 | ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C | 10,740 TON | | |
| 0047 | 1519000000-E | 610 | ASPHALT CONC SURFACE COURSE, TYPE S9.5B | 5,320 TON | | |
| 0048 | 1523000000-E | 610 | ASPHALT CONC SURFACE COURSE, TYPE S9.5C | 11,490 TON | | |
| 0049 | 1575000000-E | 620 | ASPHALT BINDER FOR PLANT MIX | 2,315 TON | | |
| 0050 | 1693000000-E | 654 | ASPHALT PLANT MIX, PAVEMENT REPAIR | 200 TON | | |
| 0051 | 2022000000-Е | 815 | SUBDRAIN EXCAVATION | 168 CY | | |
| 0052 | 2026000000-E | 815 | GEOTEXTILE FOR SUBSURFACE DRAINS | 500 SY | | |
| 0053 | 2036000000-E | 815 | SUBDRAIN COARSE AGGREGATE | 84 CY | | |

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|--------------|----------|--|-------------|-----------|--------|
| | | | | | | |
| 0054 | 2044000000-E | 815 | 6" PERFORATED SUBDRAIN PIPE | 500 LF | | |
| 0055 | 2070000000-N | 815 | SUBDRAIN PIPE OUTLET | 1 EA | | |
| 0056 | 2077000000-Е | 815 | 6" OUTLET PIPE | 6 LF | | |
| 0057 | 2220000000-Е | 838 | REINFORCED ENDWALLS | 13.7 CY | | |
| 0058 | 2253000000-Е | 840 | PIPE COLLARS | 1.34 CY | | |
| 0059 | 2264000000-E | 840 | PIPE PLUGS | 0.35 CY | | |
| 0060 | 2275000000-Е | SP | FLOWABLE FILL | 11 CY | | |
| 0061 | 2286000000-N | 840 | MASONRY DRAINAGE STRUCTURES | 67 EA | | |
| 0062 | 2297000000-E | | MASONRY DRAINAGE STRUCTURES | 30.8 CY | | |
| 0063 | 2308000000-Е | | MASONRY DRAINAGE STRUCTURES | 7.8 LF | | |
| 0064 | 2364000000-N | 840 | FRAME WITH TWO GRATES, STD 840.16 | 27 EA | | |
| 0065 | 2364200000-N | 840 | FRAME WITH TWO GRATES, STD 840.20 | 7 EA | | |
| 0066 | 2365000000-N | 840 | FRAME WITH TWO GRATES, STD 840.22 | 21 EA | | |
| 0067 | 2366000000-N | 840 | FRAME WITH TWO GRATES, STD 840.24 | 5 EA | | |
| 0068 | 2367000000-N | 840 | FRAME WITH TWO GRATES, STD 840.29 | 3 EA | | |
| 0069 | 2374000000-N | 840 | FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G) | 3 EA | | |
| 0070 | 2396000000-N | 840 | FRAME WITH COVER, STD 840.54 | 1 EA | | |
| 0071 | 2407000000-N | 840 | STEEL FRAME WITH TWO GRATES, STD 840.37 | 1 EA | | |
| | | | | | | |

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|--------------|----------|--|-------------|-----------|--------|
| | | | | | | |
| 0072 | 2451000000-N | 852 | CONCRETE TRANSITIONAL SECTION FOR DROP INLET | 23 EA | | |
| 0073 | 2549000000-E | 846 | 2'-6" CONCRETE CURB & GUTTER | 280 LF | | |
| 0074 | 2556000000-Е | 846 | SHOULDER BERM GUTTER | 910 LF | | |
| 0075 | 2619000000-E | 850 | 4" CONCRETE PAVED DITCH | 110 SY | | |
| 0076 | 2655000000-Е | 852 | 5" MONOLITHIC CONCRETE ISLANDS (KEYED IN) | 1,610 SY | | |
| 0077 | 2724000000-Е | 857 | PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED | 40 LF | | |
| 0078 | 2815000000-N | 858 | ADJUSTMENT OF DROP INLETS | 1 EA | | |
| 0079 | 2938000000-N | 859 | CONVERT EXISTING DROP INLET TO JUNCTION BOX WITH MANHOLE | 1 EA | | |
| 0800 | 3000000000-N | SP | IMPACT ATTENUATOR UNIT, TYPE 350 | 4 EA | | |
| 0081 | 303000000-Е | 862 | STEEL BM GUARDRAIL | 2,375 LF | | |
| 0082 | 3105000000-N | 862 | STEEL BM GUARDRAIL TERMINAL SECTIONS | 2 EA | | |
| 0083 | 3150000000-N | 862 | ADDITIONAL GUARDRAIL POSTS | 10 EA | | |
| 0084 | 3210000000-N | 862 | GUARDRAIL ANCHOR UNITS, TYPE CAT-1 | 2 EA | | |
| 0085 | 3270000000-N | SP | GUARDRAIL ANCHOR UNITS, TYPE 350 | 3 EA | | |
| 0086 | 3317000000-N | 862 | GUARDRAIL ANCHOR UNITS, TYPE B-77 | 7 EA | | |
| 0087 | 3360000000-E | 863 | REMOVE EXISTING GUARDRAIL | 440 LF | | |
| 0088 | 3503000000-Е | 866 | WOVEN WIRE FENCE, 47" FABRIC | 6,360 LF | | |
| 0089 | 3506000000-Е | 866 | 4" TIMBER FENCE POSTS, ***** LONG (8') | 386 EA | | |

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|--------------|----------|---|-------------|-----------|--------|
| | | | | | | |
| 0090 | 3515000000-E | 866 | 5" TIMBER FENCE POSTS, 8'-0" LONG | 127 EA | | |
| 0091 | 3533000000-E | 866 | CHAIN LINK FENCE, **" FABRIC (84") | 5,310 LF | | |
| 0092 | 3539000000-E | 866 | METAL LINE POSTS FOR **" CHAIN LINK FENCE (84") | 447 EA | | |
| 0093 | 3545000000-E | 866 | METAL TERMINAL POSTS FOR **" CHAIN LINK FENCE (84") | 37 EA | | |
| 0094 | 3578000000-N | SP | GENERIC FENCING ITEM 24' STEEL PIPE GATE | 1 EA | | |
| 0095 | 3628000000-E | 876 | RIP RAP, CLASS I | 730 TON | | |
| 0096 | 3649000000-Е | 876 | RIP RAP, CLASS B | 380 TON | | |
| 0097 | 3656000000-E | 876 | GEOTEXTILE FOR DRAINAGE | 3,915 SY | | |
| 0098 | 4048000000-Е | 902 | REINFORCED CONCRETE SIGN FOUN- DATIONS | 4 CY | | |
| 0099 | 4054000000-Е | 902 | PLAIN CONCRETE SIGN FOUNDA- TIONS | 1 CY | | |
| 0100 | 4057000000-E | SP | OVERHEAD FOOTING | 37 CY | | |
| 0101 | 4060000000-E | 903 | SUPPORTS, BREAKAWAY STEEL BEAM | 4,814 LB | | |
| 0102 | 4072000000-E | 903 | SUPPORTS, 3-LB STEEL U-CHANNEL | 220 LF | | |
| 0103 | 4082000000-E | 903 | SUPPORTS, WOOD | 1,905 LF | | |
| 0104 | 4082100000-N | SP | SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ****** (21+00 -YWB01-) | Lump Sum | L.S. | |
| 0105 | 4082100000-N | SP | SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ****** (96+78 -L-) | Lump Sum | L.S. | |
| 0106 | 4096000000-N | 904 | SIGN ERECTION, TYPE D | 5 EA | | |

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|--------------|----------|---|------------|-----------|--------|
| | | | | | | |
| 0107 | 4102000000-N | 904 | SIGN ERECTION, TYPE E | 78 EA | | |
| 0108 | 4108000000-N | 904 | SIGN ERECTION, TYPE F | 11 EA | | |
| 0109 | 4110000000-N | 904 | SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A) | 9 EA | | |
| 0110 | 4116100000-N | 904 | SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (D) | 4 EA | | |
| 0111 | 4141000000-N | 907 | | 4 EA | | |
| 0112 | 4158000000-N | 907 | DISPOSAL OF SIGN SYSTEM, WOOD | 49 EA | | |
| 0113 | 4370000000-N | SP | GENERIC SIGNING ITEM DISPOSAL OF FLASHER SYSTEM | Lump Sum | L.S. | |
| 0114 | 4400000000-E | 1110 | WORK ZONE SIGNS (STATIONARY) | 256 SF | | |
| 0115 | 4405000000-E | 1110 | WORK ZONE SIGNS (PORTABLE) | 580 SF | | |
| 0116 | 4410000000-E | 1110 | WORK ZONE SIGNS (BARRICADE MOUNTED) | 214 SF | | |
| 0117 | 4415000000-N | 1115 | FLASHING ARROW BOARD | 2 EA | | |
| 0118 | 4420000000-N | 1120 | PORTABLE CHANGEABLE MESSAGE SIGN | 2 EA | | |
| 0119 | 4430000000-N | 1130 | DRUMS | 500 EA | | |
| 0120 | 4435000000-N | 1135 | CONES | 100 EA | | |
| 0121 | 4445000000-E | | BARRICADES (TYPE III) | 232 LF | | |
| 0122 | 4455000000-N | | FLAGGER | 360 DAY | | |
| 0123 | 4465000000-N | 1160 | TEMPORARY CRASH CUSHIONS | 5 EA | | |
| 0124 | 448000000-N | 1165 | TMA | 2 EA | | |
| 0125 | 4490000000-E | 1170 | PORTABLE CONCRETE BARRIER (ANCHORED) | 721 LF | | |

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|--------------|----------|---|--------------|-----------|--------|
| | | | | | | |
| 0126 | 4510000000-N | SP | LAW ENFORCEMENT | 240 HR | | |
| 0127 | 4516000000-N | 1180 | SKINNY DRUM | 200 EA | | |
| 0128 | 4650000000-N | 1251 | TEMPORARY RAISED PAVEMENT MARKERS | 268 EA | | |
| 0129 | 4685000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS) | 22,017 LF | | |
| 0130 | 4686000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS) | 9,685 LF | | |
| 0131 | 4688000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS) | 24,947 LF | | |
| 0132 | 4690000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (6", 120 MILS) | 6,069 LF | | |
| 0133 | 4695000000-Е | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS) | 2,838 LF | | |
| 0134 | 4697000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS) | 899 LF | | |
| 0135 | 4700000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS) | 2,035 LF | | |
| 0136 | 4702000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (12", 120 MILS) | 1,090 LF | | |
| 0137 | 4705000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (16", 120 MILS) | 95 LF | | |
| 0138 | 4710000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS) | 580 LF | | |
| 0139 | 4721000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS) | 24 EA | | |
| 0140 | 4725000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS) | 98 EA | | |
| 0141 | 4810000000-E | 1205 | PAINT PAVEMENT MARKING LINES (4") | 16,133 LF | | |
| 0142 | 4820000000-E | 1205 | PAINT PAVEMENT MARKING LINES (8") | 222 LF | | |

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|--------------|----------|--|-----------------|-----------|--------|
| | | | | | | |
| 0143 | 4835000000-Е | 1205 | PAINT PAVEMENT MARKING LINES (24") | 137 LF | | |
| 0144 | 4845000000-N | 1205 | PAINT PAVEMENT MARKING SYMBOL | 13 EA | | |
| 0145 | 4847000000-E | 1205 | POLYUREA PAVEMENT MARKING LINES (4", *********) (HIGHLY REFLECTIVE ELEMENTS) | 1,116 LF | | |
| 0146 | 4900000000-N | 1251 | PERMANENT RAISED PAVEMENT MARKERS | 6 EA | | |
| 0147 | 4905000000-N | 1253 | SNOWPLOWABLE PAVEMENT MARKERS | 800 EA | | |
| 0148 | 4935000000-N | 1267 | FLEXIBLE DELINEATORS (CRYSTAL) | 76 EA | | |
| 0149 | 4940000000-N | 1267 | FLEXIBLE DELINEATORS (YELLOW) | 64 EA | | |
| 0150 | 5325200000-E | 1510 | 2" WATER LINE | 12 LF | | |
| 0151 | 5325600000-E | 1510 | 6" WATER LINE | 85 LF | | |
| 0152 | 5325800000-E | 1510 | 8" WATER LINE | 4,450 LF | | |
| 0153 | 5326000000-E | 1510 | 10" WATER LINE | 5,402 LF | | |
| 0154 | 5326200000-E | 1510 | 12" WATER LINE | 4,224 LF | | |
| 0155 | 5329000000-Е | SP | DUCTILE IRON WATER PIPE FITTINGS | 13,510 LB | | |
| 0156 | 5536000000-E | | 2" VALVE | 1 EA | | |
| 0157 | 5540000000-E | 1515 | 6" VALVE | 2 EA | | |
| 0158 | 5546000000-E | 1515 | 8" VALVE | 5 EA | | |
| 0159 | 5552000000-E | 1515 | 10" VALVE | 4 EA | | |
| 0160 | 5558000000-E | 1515 | 12" VALVE | 1 EA | | |
| 0161 | 5571800000-E | 1515 | 8" TAPPING VALVE | 1 EA | | |

| Line # | Item Number | Sec # | Description | Quantity Unit Cost | Amount |
|-----------|--------------|----------|---------------------------------------|--------------------|--------|
| | | | | | |
| 0162 | 5589200000-E | 1515 | 2" AIR RELEASE VALVE | 2 EA | |
| 0163 | 5648000000-N | 1515 | RELOCATE WATER METER | 4 EA | |
| 0164 | 5649000000-N | 1515 | RECONNECT WATER METER | 2 EA | |
| 0165 | 5672000000-N | 1515 | RELOCATE FIRE HYDRANT | 4 EA | |
| 0166 | 5709100000-E | 1520 | 2" FORCE MAIN SEWER | 476 LF | |
| 0167 | 5709300000-E | 1520 | 6" FORCE MAIN SEWER | 60 LF | |
| 0168 | 5709400000-E | 1520 | 8" FORCE MAIN SEWER | 2,957 LF | |
| 0169 | 5769000000-E | SP | DUCTILE IRON SEWER PIPE FITTINGS | 4,030 LB | |
| 0170 | 5775000000-E | 1525 | 4' DIA UTILITY MANHOLE | 2 EA | |
| 0171 | 5781000000-E | 1525 | UTILITY MANHOLE WALL, 4' DIA | 2 LF | |
| 0172 | 5798000000-E | 1530 | ABANDON **" UTILITY PIPE (2") | 530 LF | |
| 0173 | 5800000000-E | 1530 | ABANDON 6" UTILITY PIPE | 165 LF | |
| 0174 | 5801000000-E | | ABANDON 8" UTILITY PIPE | 7,435 LF | |
| 0175 | 5802000000-E | | ABANDON 10" UTILITY PIPE | 5,353 LF | |
| 0176 | 5804000000-E | 1530 | ABANDON 12" UTILITY PIPE | 4,092 LF | |
| 0177 | 5816000000-N | 1530 | ABANDON UTILITY MANHOLE | 1 EA | |
| 0178 | 5828000000-N | 1530 | REMOVE UTILITY MANHOLE | 1 EA | |
| 0180 | 6000000000-E | 1605 | TEMPORARY SILT FENCE | 27,500 LF | |
| 0181 | 6006000000-E | 1610 | STONE FOR EROSION CONTROL, CLASS A | 2,680 TON | |
| 0182 | 6009000000-E | 1610 | STONE FOR EROSION CONTROL, CLASS B | 5,375 TON | |

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| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|--------------|----------|---------------------------------------|--------------|-----------|--------|
| | | | | | | |
| 0183 | 6012000000-Е | 1610 | SEDIMENT CONTROL STONE | 4,255 TON | | |
| 0184 | 6015000000-E | 1615 | TEMPORARY MULCHING | 179.5 | | |
| | | | | ACR | | |
| 0185 | 6018000000-Е | 1620 | SEED FOR TEMPORARY SEEDING | 7,800 LB | | |
| 0186 | 6021000000-Е | 1620 | FERTILIZER FOR TEMPORARY SEED- ING | 39 TON | | |
| 0187 | 6024000000-E | 1622 | TEMPORARY SLOPE DRAINS | 5,000 LF | | |
| 0188 | 6029000000-E | SP | SAFETY FENCE | 2,000 LF | | |
| 0189 | 6030000000-E | 1630 | SILT EXCAVATION | 15,200 CY | | |
| 0190 | 6036000000-E | 1631 | MATTING FOR EROSION CONTROL | 22,500 SY | | |
| 0191 | 6037000000-E | SP | COIR FIBER MAT | 1,100 SY | | |
| 0192 | 6042000000-E | 1632 | 1/4" HARDWARE CLOTH | 800 LF | | |
| 0193 | 6043000000-E | SP | LOW PERMEABILITY GEOTEXTILE | 500 SY | | |
| 0194 | 6045000000-E | SP | **" TEMPORARY PIPE (24") | 110 LF | | |
| 0195 | 6069000000-E | 1638 | STILLING BASINS | 686 CY | | |
| 0196 | 6071010000-E | | WATTLE | 8,400 LF | | |
| 0197 | 6071013000-Е | SP | WATTLE BARRIER | 1,900 LF | | |
| 0198 | 6071020000-E | SP | POLYACRYLAMIDE (PAM) | 5,620 LB | | |
| 0199 | 6071030000-E | 1640 | COIR FIBER BAFFLE | 5,500 LF | | |
| 0200 | 6071050000-E | SP | **" SKIMMER (1-1/2") | 11 EA | | |
| 0201 | 6071050000-E | SP | **" SKIMMER (2") | 4 EA | | |
| 0202 | 6084000000-E | 1660 | SEEDING & MULCHING | 126 ACR | | |

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|--------------|----------|--|-------------|-----------|--------|
| | | | | | | |
| 0203 | 6087000000-Е | 1660 | MOWING | 67 ACR | | |
| 0204 | 6090000000-E | 1661 | SEED FOR REPAIR SEEDING | 1,850 LB | | |
| 0205 | 6093000000-E | 1661 | FERTILIZER FOR REPAIR SEEDING | 5.5 TON | | |
| 0206 | 6096000000-E | 1662 | SEED FOR SUPPLEMENTAL SEEDING | 2,950 LB | | |
| 0207 | 6108000000-E | 1665 | FERTILIZER TOPDRESSING | 88 TON | | |
| 0208 | 6111000000-E | SP | IMPERVIOUS DIKE | 382 LF | | |
| 0209 | 6114500000-N | 1667 | SPECIALIZED HAND MOWING | 10 MHR | | |
| 0210 | 6117000000-N | SP | RESPONSE FOR EROSION CONTROL | 125 EA | | |
| 0211 | 6120000000-E | SP | CULVERT DIVERSION CHANNEL | 160 CY | | |
| 0212 | 6123000000-E | 1670 | REFORESTATION | 0.1 ACR | | |
| 0213 | 6132000000-N | SP | GENERIC EROSION CONTROL ITEM CONCRETE WASHOUT STRUCTURE | 10 EA | | |
| 0214 | 7060000000-E | 1705 | SIGNAL CABLE | 9,560 LF | | |
| 0215 | 7108000000-E | 1705 | VEHICLE SIGNAL HEAD (12", 1 SECTION) | 8 EA | | |
| 0216 | 7120000000-E | 1705 | VEHICLE SIGNAL HEAD (12", 3 SECTION) | 37 EA | | |
| 0217 | 7132000000-E | 1705 | VEHICLE SIGNAL HEAD (12", 4 SECTION) | 4 EA | | |
| 0218 | 7144000000-E | 1705 | VEHICLE SIGNAL HEAD (12", 5 SECTION) | 1 EA | | |
| 0219 | 7264000000-E | 1710 | MESSENGER CABLE (3/8") | 2,200 LF | | |
| 0220 | 7279000000-E | 1715 | TRACER WIRE | 3,797 LF | | |
| 0221 | 7300000000-E | 1715 | UNPAVED TRENCHING (********) (1, 2") | 6,352 LF | | |

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|--------------|----------|--|--------------|-----------|--------|
| | | | | | | |
| 0222 | 730000000-Е | 1715 | UNPAVED TRENCHING (********) (2, 2") | 860 LF | | |
| 0223 | 7300000000-E | 1715 | UNPAVED TRENCHING (********) (3, 2") | 250 LF | | |
| 0224 | 7300100000-E | 1715 | UNPAVED TRENCHING FOR TEMP- ORARY LEAD-IN | 850 LF | | |
| 0225 | 7301000000-E | 1715 | DIRECTIONAL DRILL (********) (1, 2") | 1,924 LF | | |
| 0226 | 7324000000-N | 1716 | JUNCTION BOX (STANDARD SIZE) | 27 EA | | |
| 0227 | 7348000000-N | 1716 | JUNCTION BOX (OVER-SIZED, HEA- VY DUTY) | 11 EA | | |
| 0228 | 7360000000-N | 1720 | WOOD POLE | 7 EA | | |
| 0229 | 7372000000-N | 1721 | GUY ASSEMBLY | 14 EA | | |
| 0230 | 7408000000-E | 1722 | 1" RISER WITH WEATHERHEAD | 2 EA | | |
| 0231 | 7420000000-E | 1722 | 2" RISER WITH WEATHERHEAD | 6 EA | | |
| 0232 | 7444000000-E | 1725 | INDUCTIVE LOOP SAWCUT | 2,800 LF | | |
| 0233 | 7456000000-E | 1726 | LEAD-IN CABLE (*************) (14-2) | 13,070 LF | | |
| 0234 | 7481000000-N | SP | SITE SURVEY | 1 EA | | |
| 0235 | 7481200000-N | SP | LUMINAIRE ARM FOR VIDEO SYSTEM | 4 EA | | |
| 0236 | 7481240000-N | SP | CAMERA WITHOUT INTERNAL LOOP EMULATOR PROCESSING UNIT | 4 EA | | |
| 0237 | 7481260000-N | SP | EXTERNAL LOOP EMULATOR PRO- CESSING UNIT | 1 EA | | |
| 0238 | 7481280000-N | SP | RELOCATE CAMERA SENSOR UNIT | 4 EA | | |
| 0239 | 7516000000-E | 1730 | COMMUNICATIONS CABLE (**FIBER) (12) | | | |

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|--------------|----------|---|-------------|-----------|--------|
| | | | | | | |
| 0240 | 7528000000-E | 1730 | DROP CABLE | 3 LF | | |
| 0241 | 7540000000-N | 1731 | SPLICE ENCLOSURE | 4 EA | | |
| 0242 | 7541000000-N | 1731 | MODIFY SPLICE ENCLOSURE | 1 EA | | |
| 0243 | 7552000000-N | 1731 | INTERCONNECT CENTER | 3 EA | | |
| 0244 | 7564100000-N | 1732 | FIBER-OPTIC TRANSCEIVER, SELF- HEALING RING | | | |
| 0245 | 7566000000-N | 1733 | DELINEATOR MARKER | 9 EA | | |
| 0246 | 7575142060-N | SP | MODIFY RADIO INSTALLATION | 2 EA | | |
| 0247 | 7576000000-N | SP | METAL STRAIN SIGNAL POLE | 7 EA | | |
| 0248 | 7613000000-N | SP | SOIL TEST | 7 EA | | |
| 0249 | 7614100000-E | SP | DRILLED PIER FOUNDATION | 64 CY | | |
| 0250 | 7636000000-N | 1745 | SIGN FOR SIGNALS | 8 EA | | |
| 0251 | 7642200000-N | 1743 | TYPE II PEDESTAL WITH FOUND- ATION | 7 EA | | |
| 0252 | 7642300000-N | 1743 | TYPE III PEDESTAL WITH FOUND- ATION | 4 EA | | |
| 0253 | 7684000000-N | 1750 | SIGNAL CABINET FOUNDATION | 3 EA | | |
| 0254 | 7756000000-N | 1751 | CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED) | 3 EA | | |
| 0255 | 7768000000-N | 1751 | CONTROLLER WITH CABINET (TYPE 2070L, POLE MOUNTED) | 1 EA | | |
| 0256 | 7780000000-N | 1751 | DETECTOR CARD (TYPE 2070L) | 26 EA | | |
| 0257 | 7901000000-N | 1753 | CABINET BASE EXTENDER | 3 EA | | |
| 0258 | 7960000000-N | SP | METAL POLE FOUNDATION REMOVAL | 7 EA | | |
| 0259 | 7972000000-N | SP | METAL POLE REMOVAL | 7 EA | | |

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| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|--------------|----------|---|--------------|-----------|--------|
| | | | | | | |
| 0260 | 7980000000-N | SP | GENERIC SIGNAL ITEM RELOCATE EMERGENCY VEHICLE PHASE SELECTOR | 1 EA | | |
| 0261 | 7980000000-N | SP | GENERIC SIGNAL ITEM RELOCATE EMERGENCY VEHICLE DETECTOR | 2 EA | | |
| 0262 | 7990000000-E | SP | GENERIC SIGNAL ITEM EMERGENCY VEHICLE DETECTOR CABLE | 750 LF | | |
| | | C | CULVERT ITEMS | | | |
| 0263 | 8126000000-N | 414 | CULVERT EXCAVATION, STA ****** (26+94.23 -Y09A-) | Lump Sum | L.S. | |
| 0264 | 8126000000-N | 414 | CULVERT EXCAVATION, STA ***** (78+05.84 -L-) | Lump Sum | L.S. | |
| 0265 | 8133000000-E | 414 | FOUNDATION CONDITIONING MATER- IAL, BOX CULVERT | 119.6 TON | | |
| 0266 | 8196000000-E | 420 | CLASS A CONCRETE (CULVERT) | 180 CY | | |
| 0267 | 8245000000-E | 425 | REINFORCING STEEL (CULVERT) | 41,114 LB | | |
| | | V | NALL ITEMS | | | |
| 0268 | 8801000000-E | SP | MSE RETAINING WALL NO **** (1) | 17,700 SF | | |
| 0269 | 8801000000-E | SP | MSE RETAINING WALL NO **** (2) | 9,200 SF | | |

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|--------------|----------|---|---------------|------------------|--------|
| | | \$ | TRUCTURE ITEMS | | | |
| 0270 | 8091000000-N | 410 | FOUNDATION EXCAVATION FOR BENT ** AT STATION ****************** (2, 32+25.84 -YEB01-) | Lump Sum | L.S. | |
| 0271 | 8112730000-N | 450 | PDA TESTING | 2 EA | | |
| 0272 | 8147000000-E | 420 | REINFORCED CONCRETE DECK SLAB | 19,091 SF | | |
| 0273 | 8161000000-E | 420 | GROOVING BRIDGE FLOORS | 17,126 SF | | |
| 0274 | 8182000000-E | 420 | CLASS A CONCRETE (BRIDGE) | 461.8 CY | | |
| 0275 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ************************************ | Lump Sum | L.S. | |
| 0276 | 8217000000-E | 425 | REINFORCING STEEL (BRIDGE) | 82,025 LB | | |
| 0277 | 8280000000-E | 440 | APPROX LBS STRUCTURAL STEEL | 887,980 LS | | |
| 0278 | 8328200000-E | SP | PILE DRIVING EQUIPMENT SETUP FOR *** STEEL PILES (HP 12 X 53) | 21 EA | | |
| 0279 | 8328400000-E | SP | PILE DRIVING EQUIPMENT SETUP FOR *** GALVANIZED STEEL PILES (PP 18 X 0.50) | 42 EA | | |
| 0280 | 8364000000-E | 450 | HP12X53 STEEL PILES | 2,250 LF | | |
| 0281 | 8387000000-E | 450 | PP 18 X 0.50 GALVANIZED STEEL PILES | 3,310 LF | | |
| 0282 | 8393000000-N | | PILE REDRIVES | 34 EA | | |
| 0283 | 8503000000-E | | CONCRETE BARRIER RAIL | 962.32 LF | | |
| 0284 | 8531000000-E | 462 | 4" SLOPE PROTECTION | 80 SY | | |
| 0285 | 8608000000-E | 876 | RIP RAP CLASS II (2'-0" THICK) | 923 TON | | |
| 0286 | 8622000000-E | 876 | GEOTEXTILE FOR DRAINAGE | 1,025 SY | | |
| 0287 | 8654000000-N | SP | DISC BEARINGS | Lump Sum | L.S. | |

Jun 13, 2017 4:12 pm

ITEMIZED PROPOSAL FOR CONTRACT NO. C203955

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| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|-----------|----------------------------------|------------|--------------------------|--------------------------|-----------|--------|
| | | | | | | |
| | | | | | | |
| 0288 | 8706000000-N | SP | EXPANSION JOINT SEALS | Lump Sum | L.S. | |
| | | | | | | |
| | | | | | | |
| 1612/ | Jun13/Q1676088.41/D ⁻ | 1349487025 | 060/E287 Total Amount Of | Bid For Entire Project : | | |

DBE GOAL SET: 10.00% DBE GOAL OBT: 10.00%

Vendor 1 of 4: S T WOOTEN CORPORATION (3760) Call Order 003 (Proposal: C203955)

Bid Information

Proposal County: CRAVEN **Bid Checksum:** F0F951E0

Vendor Address: PO Box 2408 Bid Total: \$24,370,634.28

3801 Black Creek Road
Wilson , NC , 27894

Time Total: \$24,370,634.28

Signature Check: Richard_E._Vick_3760

Time Bid Received: June 20, 2017 01:56 PM

Amendment Count: 1

Bidding Errors:

Item Warning: item 4400000000-E (Line# 0114) quantity Item Warning: item 4410000000-E (Line# 0116) quantity Item Warning: item 8147000000-E (Line# 0272) quantity Item Warning: item 8503000000-E (Line# 0283) quantity DBE Warning: DBEName National Erectors, not chosen fr

NCDOT Page 14 of 192

Vendor 1 of 4: S T WOOTEN CORPORATION (3760) Call Order 003 (Proposal: C203955)

Bid Bond Information

Projects: Bond Maximum:
Counties: State of Incorporation:

Bond ID: GSP8-U6F5-VVML-ATQD **Agency Execution Date:** 6/20/2017

Paid by Check: No Surety Name: SurePathNetwork

Bond Percent: 5% **Bond Agency Name:** Zurich American Insurance

Company

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Bidder 1 of 4

Vendor 3760's Bid Information for Call 003, Letting L170620, 06/20/17

S. T. Wooten Corporation (3760) Call Order 003 (Proposal ID C203955)

LIST OF DBE PARTICIPANTS

| _ | | WORK CODE TYPE OF WORK | CERT TYPE A | AMOUNT | |
|----------|--|---------------------------|----------------|------------|-----------|
| WB 12278 | CLIFTON CONSTRUCTION CO., INC. 1435 GIDDENSVILLE ROAD , FAISON, | NC 28341 | Sub | 27,270.00 | COMMITTED |
| WB 4898 | BULLINGTON CONSTRUCTION INC 417 FOXGLOVE LANE , INDIAN TRAIL | | Sub | 294,481.75 | COMMITTED |
| WB 3538 | BONN-J CONTRACTING INC OF FLORI 2596 CURRYVILLE ROAD , CHULUOTA, | • | Sub | 837,245.00 | COMMITTED |
| MB 15521 | 4 D CONSTRUCTION P.O. BOX 806 , MAXTON, NC 28364 | 3 33 | Sub | 21,152.83 | COMMITTED |
| WB 3080 | CURTIN TRUCKING & DRAINAGE, INC POST OFFICE BOX 38220 , CHARLOTT | F. NC 282781003 | Sub | 69,908.95 | COMMITTED |
| MB 2656 | National Erectors Rebar, Inc P.O.Box 2457 Lumberton, NC 28359 | | Sub | 46,644.03 | COMMITTED |
| MB 5124 | R. L. THOMPSON CO., INC. 655 PERRY TOWN RD , NEW BERN, NO | | Sub | 822,732.52 | COMMITTED |
| WB 4761 | TRAFFIC CONTROL SAFETY SERVICES POST OFFICE BOX 24511 , WINSTON- | | Sub | 8,805.00 | COMMITTED |
| WB 4761 | TRAFFIC CONTROL SAFETY SERVICES POST OFFICE BOX 24511 , WINSTON-SA | | Sup | 103,040.42 | COMMITTED |
| WB 11218 | K & D LOGISTICS LLC 820 PURSER ROAD , VANCEBORO, NC | | Sub | 100,005.00 | COMMITTED |
| MB 15551 | PHIL CRUMB TRUCKING 1092 CODY DRIVE , GRIMESLAND, NO | | Sub | 72,000.00 | COMMITTED |
| WB 2023 | JOHN L. PURYEAR TRUCKING, INC. POST OFFICE BOX 447 , NEW BERN, | | Sub | 75,750.00 | COMMITTED |
| | TOOL OLITECT DOX 441 , NEW DERN, | 110 20000 | TOTAL : 01 | 127 010 22 | |

TOTAL: \$2,437,819.33

10.00%

Vendor 3760's Bid Information for Call 003, Letting L170620, 06/20/17

S. T. Wooten Corporation (3760) Call Order 003 (Proposal ID C203955)

Miscelleneous Data Info - Contractor Responses:

NON-COLLUSION AND DEBARMENT CERTIFICATION

Explanation of the prospective bidder that is unable to certify to any of the statements in this certification:

Explanation:

NOT ANSWERED

NOT ANSWERED

NOT ANSWERED

NOT ANSWERED

AWARD LIMITS ON MULTIPLE PROJECTS

By answering YES to this statement, the bidder acknowleges that they are using the award limits on multiple projects. No

NCDOT Page 17 of 249

Bidder 1 of 4

It is the desire of the Bidder to be awarded contracts, the value of which will not exceed a total of NOT ANSWERED for those projects indicated herein, for which bids will be opened on (MM/DD/YY)

The Award Limits shall apply to the following projects:

Contract Number

County

NOT ANSWERED

NOT ANSWERED

NOT ANSWERED

NOT ANSWERED

NOT ANSWERED

NOT ANSWERED

Bid Bond Data Info - Contractor Responses:

BondID: GSP8-U6F5-VVML-ATQD

Surety Registry Agency: SurePathNetwork

Verified?: Yes

Surety Agency: Zurich American Insurance Company

Bond Execution Date: 6/20/2017

Bond Amount: \$1,218,531.71 (Five Percent of Bid)

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Contract ID: C203955 Project(s): NHS-0070(154)

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

+----+ | Approx. | Unit Price | Bid Amount | Quantity | -----| and Units | Dollars | Cts | Dollars | Ct| |Line| Item | No.| Description

Section 0001 ROADWAY ITEMS - NPAR (CITY OF HAVELOCK)

| . | Alt Group | | | | |
|----------|--|--------------------|------------|-----------------------|---------------------------|
| 0001 | 0000100000-N MOBILIZATIO N | LUMP | | LUMP | 1,213,000.00 |
| | 0000400000-N CONSTRUCTIO N SURVEYING | LUMP | | LUMP | 325,000.00 |
| | 0000700000-N FIELD OFFICE | LUMP | | LUMP | 54,500.00 |
| 0004 | 0029000000-N REINFORCED BRIDGE APPROACH FILL, STATION ************************************ | LUMP | | LUMP | 22,800.00 22,800.00 |
| | 0036000000-E UNDERCUT EXCAVATION | CY | 22,600.000 | 10.00000 | 226,000.00 |
| 10006 | 0043000000-n GRADING | LUMP | | LUMP | 5,740,000.00 |
| | 0050000000-E SUPPLEMENTA RY CLEARING & GRUB-BING | ACR | 2.000 | 9,000.00000 | 18,000.00 |
| | 0134000000-E DRAINAGE DITCH EXCAVATION | CY | 2,900.000 | 17.99000 | 52 , 171.00 |
| | 0192000000-N PROOF ROLLING | HR | 15.000 | 235.00000 | 3,525.00 |
| | 0195000000-E SELECT GRANULAR MATERIAL | CY | 37,300.000 | 14.00000 | 522 , 200.00 |
| | | | | | ' |

Project(s): NHS-0070(154) Contract ID: C203955

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| Bidder: 3/60 - S. T. Wooten Corporation | | | | | | |
|---|---|-------------------------|-------------------------|--------------------|--|--|
| Line No. | • | Approx. Quantity | Unit Price | Bid Amount | | |
| | - I | and Units | Dollars Cts | Dollars Ct | | |
| | 0196000000-E GEOTEXTILE FOR SOIL STABILIZA-TION | | 2.25000 2.25000 | 157,500.00 | | |
| • | 0199000000-E TEMPORARY SHORING | 780.000 SF | 37.50000 | 29 , 250.00 | | |
| 0013 | 0318000000-E FOUNDATION CONDITIONING MATE- RIAL, MINOR STRUCTURES | | 46.00000 46.00000 | 79,672.00 | | |
| 0014 | 0320000000-E FOUNDATION CONDITIONING GEO- TEXTILE | 8,298.000 SY | 3.95000 3.95000 | 32,777.10 | | |
| | 0342000000-E **" SIDE DRAIN PIPE (30") | 244.000 LF | 68.00000 | 16,592.00 | | |
| | 0343000000-E 15" SIDE DRAIN PIPE | | 38.00000 | 5,016.00 | | |
| | 0344000000-E 18" SIDE DRAIN PIPE | 148.000 LF | 43.00000 | 6,364.00 | | |
| | 0345000000-E 24" SIDE DRAIN PIPE | 244.000 LF | 58.00000 | 14,152.00 | | |
| | 0366000000-E 15" RC PIPE CULVERTS, CLASS III | | 41.00000 | 48,872.00 | | |
| | • | 644.000 LF | 53.50000 53.50000 | 34,454.00 | | |
| | | 140.000 LF | 59.50000 | 8,330.00 | | |
| | 0384000000-E 30" RC PIPE CULVERTS, CLASS III | | 70.00000 | 29,960.00 | | |
| | | | | + | | |

State of NC Date: 05-23-17 Revised: 06-13-17

Dept of Transportation

Project(s): NHS-0070(154) Contract ID: C203955 Letting Date: 06-20-17 Call Order: 003

Bidder: 3760 - S. T. Wooten Corporation

| Line | • | | Approx. | Unit Price | Bid Amount |
|-------|--|-------------------|-----------------------|-------------------------|----------------|
| No. | Description | | Quantity and Units | Dollars | Dollars Ct |
| • | 0408000000-E 54" RC PIPE CULVERTS, CLASS III | LF | 136.000 | | 28,424.00 |
| | 0420000000-E 66" RC PIPE CULVERTS, CLASS III | LF | 320.000 | | 123,520.00 |
| | 0448200000-E 15" RC PIPE CULVERTS, CLASS IV | LF | 1,724.000 | | 87,924.00 |
| | 0448300000-E 18" RC PIPE CULVERTS, CLASS IV | LF | 1,128.000 | | 62,604.00 |
| | 0448400000-E 24" RC PIPE CULVERTS, CLASS IV | LF | 100.000 | 83.75000 | 8,375.00 |
| | 0448500000-E 30" RC PIPE CULVERTS, CLASS IV | LF | 96.000 | 102.75000 | 9,864.00 |
| 0029 | 0546000000-E **" CAA PIPE CULVERTS, *****" THICK (15", 0.064") | LF | 412.000 | 40.00000 40.00000 | 16,480.00 |
| 10030 | 0546000000-E **" CAA PIPE CULVERTS, *****" THICK (18", 0.064") | LF | 160.000 | 45.50000 | 7,280.00 |
| 0031 | 0564000000-E **" CAA PIPE ELBOWS, *****" THICK (15", 0.064") | EA | | 475.00000 | 4,750.00 |
| 0032 | 0564000000-E **" CAA PIPE ELBOWS, *****" THICK (18", 0.064") | EA | 2.000 | 515.00000 | 1,030.00 |
| 0033 | 0973100000-E **" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (18", 0.5") | | 80.000 | | 19,520.00 |

Contract ID: C203955 Project(s): NHS-0070(154) Letting Date: 06-20-17 Call Order: 003

Bidder: 3760 - S. T. Wooten Corporation | No. | Description | Quantity |------|
| and Units | Dollars | Cts | Dollars | Ct| |0973100000-E **" WELDED | | 0034|STEEL PIPE, ****" THICK, | 380.000| 320.00000| 121,600.00| |GRADE B IN SOIL (30", | |0995000000-E PIPE 2,803.000| 19.50000| 54,658.50| 0035|REMOVAL |LF 96.00000 5.000 İ 100361 |1099500000-E SHALLOW | 10,520.000| 12.50000| 131,500.00| |0037|UNDERCUT |1099700000-E CLASS IV | |0038|SUBGRADE STABILIZA- TION| 20,300.000| 36.50000| 740,950.00| |1111000000-E CLASS IV | |1121000000-E AGGREGATE | | 3,354.000| 51.50000| 172,731.00| 10040|BASE COURSE |122000000-E INCIDENTAL | 041|STONE BASE | 200.000| |0041|STONE BASE 39.25000| 100421 |148900000-E ASPHALT | 0043|CONC BASE COURSE, TYPE | 5,090.000| 68.85000| 350,446.50| |TON | |B25.0B

Project(s): NHS-0070(154) Contract ID: C203955 Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| 3idder: 3760 - S. T. Wooten Corporation | | | | | | | |
|---|--|------------------------|---|-----------------------------|--|--|--|
| Line No. | • | Approx. Quantity | Unit Price | Bid Amount | | | |
| | | and Units | Dollars Cts | Dollars Ct | | | |
| 0045 | 1498000000-E ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B | 1,380.0 TON | 00 68.35000 | 94,323.00 | | | |
| 0046 | 1503000000-E ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C | 10,740.0 TON | 00 68.40000 | 734,616.00 | | | |
| 0047 | 1519000000-E ASPHALT CONC SURFACE COURSE, TYPE S9.5B | 5,320.0 TON | 00 66.75000 | 355,110.00 | | | |
| 0048 | 1523000000-E ASPHALT CONC SURFACE COURSE, TYPE S9.5C | 11,490.0 TON | | | | | |
| | 1575000000-E ASPHALT BINDER FOR PLANT MIX | 2,315.0 TON | 00 320.00000 | 740,800.00 740,800.00 | | | |
| 0050 | 169300000-E ASPHALT PLANT MIX, PAVEMENT REPAIR | 200.0 TON | 00 250.00000 | | | | |
| | 202200000-E SUBDRAIN EXCAVATION | 168.0 CY | 00 25.00000 | | | | |
| | 2026000000-E GEOTEXTILE FOR SUBSURFACE DRAINS | 500.0 SY | 00 9.00000 | 4,500.00 4,500.00 | | | |
| | 2036000000-E SUBDRAIN COARSE AGGREGATE | 84.0 CY | 00 60.00000 | 5,040.00 | | | |
| | 2044000000-E 6" PERFORATED SUBDRAIN PIPE | 500.0 LF | 14.00000 | 7,000.00 7,000.00 | | | |
| | 207000000-N SUBDRAIN PIPE OUTLET | 1.0 EA | | | | | |
| | 2077000000-E 6" OUTLET PIPE | 6.0 LF | 00 30.00000 | | | | |

Project(s): NHS-0070(154) Contract ID: C203955

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

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|---------------|--|--------------|---------------------|------------------------|----------------|
| Line No. | | | Approx. Quantity | Unit Price | Bid Amount |
| | | | and Units | Dollars Cts | Dollars Ct |
| | 222000000-E REINFORCED ENDWALLS | CY | 13.700 | | 34,250.00 |
| | 2253000000-E PIPE COLLARS | CY | 1.340 | | 4,087.00 |
| 0059 | | CY | 0.350 | 2,665.00000 | 932.75 |
| 0060 | | CY | 11.000 | 495.00000 | 5,445.00 |
| | 2286000000-N MASONRY DRAINAGE STRUCTURES | EA | 67.000 | 1,800.00000 | 120,600.00 |
| | 2297000000-E MASONRY DRAINAGE STRUCTURES | CY | 30.800 | 1,525.00000 | 46,970.00 |
| | 2308000000-E MASONRY DRAINAGE STRUCTURES | LF | 7.800 | | 2,340.00 |
| | 2364000000-N FRAME WITH TWO GRATES, STD 840.16 | | 27.000 | | 15,120.00 |
| | 2364200000-N FRAME WITH TWO GRATES, STD 840.20 | | 7.000 | 570.00000 | 3,990.00 |
| | 2365000000-N FRAME WITH TWO GRATES, STD 840.22 | | 21.000 | 570.00000 | 11,970.00 |
| | 2366000000-N FRAME WITH TWO GRATES, STD 840.24 | | 5.000 | | 2,900.00 |
| | 2367000000-N FRAME WITH TWO GRATES, STD 840.29 | | 3.000 | | 1,710.00 |
| | - | | · - | _ | - + |

State of NC Date: 05-23-17 Revised: 06-13-17

Dept of Transportation

Contract ID: C203955 Project(s): NHS-0070(154)

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| Bidder: 3760 - S. T. Wooten Corporation | | | | | | | |
|--|------------------------|-----------------------|-------------------------------|-------------------------|--|--|--|
| Item Description | | Approx. Ouantity | Unit Price | Bid Amount | | | |
| | and Units | | Dollars Cts | Dollars Ct | | | |
| 2374000000-N FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G) | EA | 3.000 | 620.00000 | 1,860.00 | | | |
| 2396000000-N FRAME WITH COVER, STD 840.54 | EA | 1.000 | 450.00000 | 450.00 | | | |
| WITH TWO GRATES, STD | | 1.000 | 1,500.00000 1,500.00000 | 1,500.00 | | | |
| | | 23.000 | 1,300.00000 | 29,900.00 | | | |
| 2549000000-E 2'-6" CONCRETE CURB & GUTTER | LF | 280.000 | 31.00000 | 8,680.00 | | | |
| 2556000000-E SHOULDER BERM GUTTER | LF | 910.000 | | 25,480.00 | | | |
| PAVED DITCH | | 110.000 | | 5,720.00 | | | |
| 2655000000-E 5" MONOLITHIC CONCRETE ISLANDS(KEYED IN) | SY | 1,610.000 | 55.00000 | 88,550.00 | | | |
| 2724000000-E PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED | LF | 40.000 | 115.00000 | 4,600.00 | | | |
| 2815000000-N ADJUSTMENT OF DROP INLETS | EA | 1.000 | 1,385.00000 | 1,385.00 | | | |
| 2938000000-N CONVERT EXISTING DROP INLET TOJUNCTION BOX WITH MANHOLE | EA | 1.000 | 1,385.00000 1,385.00000 | 1,385.00 1,385.00 | | | |
| | Item Description | Item | Item | Item | | | |

Project(s): NHS-0070(154) Contract ID: C203955

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| + | | | | | + |
|---------------|---|-------------------|---------------------|------------------------|---------------------|
| Line No. | | | Approx. Quantity | Unit Price | Bid Amount |
| | | i | and Units | Dollars Cts | Dollars Ct |
| 0800 | 3000000000-N IMPACT ATTENUATOR UNIT, TYPE 350 | EA | 4.000 | 14,950.00000 | |
| | 303000000-E STEEL BM GUARDRAIL | LF | 2,375.000 | 16.25000 | |
| 0082 | 3105000000-N STEEL BM GUARDRAIL TERMINAL SECTIONS | EA | 2.000 | 125.00000 | |
| | 3150000000-N ADDITIONAL GUARDRAIL POSTS | EA | 10.000 | 44.00000 | 440.00 |
| | 3210000000-N GUARDRAIL ANCHOR UNITS, TYPE CAT-1 | EA | 2.000 | 600.00000 | 1,200.00 |
| | 3270000000-N GUARDRAIL ANCHOR UNITS, TYPE 350 | EA | 3.000 | 1,850.00000 | 5,550.00 |
| | 3317000000-N GUARDRAIL ANCHOR UNITS, TYPE B-77 | EA | 7.000 | 1,700.00000 | |
| | 3360000000-E REMOVE EXISTING GUARDRAIL | LF | 440.000 | 2.00000 | |
| | | LF | 6,360.000 | 3.25000 | |
| 0089 | 3506000000-E 4" TIMBER FENCE POSTS, ***** LONG (8') | EA | | 16.00000 | 6,176.00 |
| | 3515000000-E 5" TIMBER FENCE POSTS, 8'-0" LONG | EA | | 38.00000 | 4,826.00 |
| | 3533000000-E CHAIN LINK FENCE, **" FABRIC (84") | | 5,310.000 | 16.00000 | |
| T | | | | | + |

Project(s): NHS-0070(154)

Contract ID: C203955 Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| Line | • | Approx. | Unit Price | Bid Amount |
|--------------------|--|----------------------------|------------------------|-------------|
| No. | Description | Quantity - and Units | Dollars Cts | Dollars Ct |
| 0092 | 3539000000-E METAL LINE POSTS FOR **" CHAINLINK FENCE (84") | 447.000 EA | | 42,465.00 |
| 0093 | 3545000000-E METAL TERMINAL POSTS FOR **" CHAIN LINK FENCE (84") | 37.000 EA | 160.00000 | 5,920.00 |
| 0094 | 3578000000-N GENERIC FENCING ITEM 24' STEEL PIPE GATE | 1.000 EA | 6,500.00000 | 6,500.00 |
| | 3628000000-E RIP RAP, CLASS I | 730.000 TON | 80.00000 | 58,400.00 |
| | 3649000000-E RIP RAP, CLASS B | 380.000 TON | 82.50000 | 31,350.00 |
| | 3656000000-E GEOTEXTILE FOR DRAINAGE | 3,915.000 SY | | 17,617.50 |
| 0098 | 4048000000-E REINFORCED CONCRETE SIGN FOUN-DATIONS | 4.000 CY | | 5,100.00 |
| | 4054000000-E PLAIN CONCRETE SIGN FOUNDA- TIONS | 1.000 CY | | 975.00 |
| • | 4057000000-E OVERHEAD FOOTING | 37.000 CY | | 36,075.00 |
| | 406000000-E SUPPORTS, BREAKAWAY STEEL BEAM | 4,814.000 LB | 3.50000 | 16,849.00 |
| | 4072000000-E SUPPORTS, 3-LB STEEL U-CHANNEL | 220.000 LF | | 2,255.00 |
| 0103 | 4082000000-E SUPPORTS, WOOD | 1,905.000 LF | | 24,765.00 |

Project(s): NHS-0070(154) Contract ID: C203955

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| + | brader. 5700 - 5. 1. Wooten Corporation | | | | | | | |
|----------------|---|-----------------------|----------------------|-------------------------|--|--|--|--|
| Line No. | | Approx. Quantity | Unit Price | Bid Amount | | | | |
| | | and Units | Dollars Cts | Dollars Ct | | | | |
| 0104 | 4082100000-N SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ****** (21+00 -YWB01-) | LUMP | LUMP | 46,110.00 | | | | |
| 0105 | 4082100000-N SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ****** (96+78 -L-) | | LUMP | 47,235.00 | | | | |
| | 4096000000-N SIGN ERECTION, TYPE D | 5.000 EA | 155.00000 | 775.00 | | | | |
| | 4102000000-N SIGN ERECTION, TYPE E | 78.000 EA | 82.00000 | 6,396.00 6,396.00 | | | | |
| | 4108000000-N SIGN ERECTION, TYPE F | 11.000 EA | 90.00000 | 990.00 | | | | |
| 0109 | 4110000000-N SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A) | 9.000 EA | 625.00000 | 5,625.00 | | | | |
| 0110 | 4116100000-N SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (D) | | 155.00000 | 620.00 | | | | |
| | 4141000000-N DISPOSAL OF SUPPORT, WOOD | • | 1.00000 | 4.00 | | | | |
| | 4158000000-N DISPOSAL OF SIGN SYSTEM, WOOD | • | 1.00000 | 49.00 | | | | |
| 0113 | 4370000000-N GENERIC SIGNING ITEM DISPOSAL OF FLASHER SYSTEM | LUMP | LUMP | 1,000.00 | | | | |
| | 4400000000-E WORK ZONE SIGNS (STATIONARY) | 256.000 SF | 10.00000 | 2,560.00 | | | | |

Project(s): NHS-0070(154) Contract ID: C203955

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| + | | | | |
|----------------------------------|---|-------------------------|-------------------------------|--------------------|
| Line Item No. Description | • | Approx. Quantity | Unit Price | Bid Amount |
| | İ | and Units | Dollars Cts | Dollars Ct |
| | 4405000000-E WORK ZONE SIGNS (PORTABLE) | | 57.00000 | 33,060.00 |
| 0116 | 4410000000-E WORK ZONE SIGNS (BARRICADE MOUNTED) | 214.000 SF | 7.50000 7.50000 | 1,605.00 |
| | 4415000000-N FLASHING ARROW BOARD | 2.000 EA | 4,200.00000 | 8,400.00 |
| | 4420000000-N PORTABLE CHANGEABLE MESSAGE SIGN | 2.000 EA | 14,600.00000 | 29 , 200.00 |
| 0119 | | 500.000 EA | 69.00000 | 34,500.00 |
| 0120 | | 100.000 EA | 20.00000 | 2,000.00 |
| | 4445000000-E BARRICADES (TYPE III) | 232.000 LF | 20.00000 | 4,640.00 |
| 0122 | | 360.000 DAY | 240.00000 | 86,400.00 86 |
| | 4465000000-N TEMPORARY CRASH CUSHIONS | 5.000 EA | 7,500.00000 7,500.00000 | 37 , 500.00 |
| 0124 | • | 2.000 EA | 26,000.00000 | 52,000.00 |
| 0125 | 4490000000-E PORTABLE CONCRETE BARRIER (ANCHORED) | 721.000 LF | 44.95000 | 32,408.95 32 |
| | 4510000000-N LAW ENFORCEMENT | | 50.00000 | 12,000.00 |
| , ==== | | | | |

Project(s): NHS-0070(154) Contract ID: C203955 Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| в1аае1 + | r: 3760 - S. T. Wooten Cor _l | pora | ation | | |
|--------------------|---|--------------------|------------------|--------------------|-------------|
| Line No. | ne Item o. Description | Approx. Quantity | Unit Price | Bid Amount | |
| | | | and Units | Dollars Cts | Dollars Ct |
| 0127 | | EA | 200.000 | | 10,200.00 |
| 0128 | 4650000000-N TEMPORARY RAISED PAVEMENT MARKERS | EA | 268.000 | | 1,608.00 |
| 0129 | 4685000000-E THERMOPLAST IC PAVEMENT MARKINGLINES (4", 90 MILS) | | 22,017.000 | | 17,613.60 |
| 0130 | 4686000000-E THERMOPLAST IC PAVEMENT MARKING LINES (4", 120 MILS) | | 9,685.000 | | 8,716.50 |
| 0131 | 4688000000-E THERMOPLAST IC PAVEMENT MARKINGLINES (6", 90 MILS) | | 24,947.000 | 1.05000 | 26,194.35 |
| 0132 | 4690000000-E THERMOPLAST IC PAVEMENT MARKINGLINES (6", 120 MILS) | | 6,069.000 | | 8,193.15 |
| 0133 | 4695000000-E THERMOPLAST IC PAVEMENT MARKINGLINES (8", 90 MILS) | | 2,838.000 | 3.00000 | 8,514.00 |
| 0134 | 4697000000-E THERMOPLAST IC PAVEMENT MARKINGLINES (8", 120 MILS) | | 899.000 | | 2,697.00 |
| 0135 | 4700000000-E THERMOPLAST IC PAVEMENT MARKINGLINES (12", 90 MILS) | İ | 2,035.000 | | 4,070.00 |
| 0136 | 4702000000-E THERMOPLAST IC PAVEMENT MARKINGLINES (12", 120 MILS) | | 1,090.000 | | 2,725.00 |
| 0137 | 4705000000-E THERMOPLAST IC PAVEMENT MARKINGLINES (16", 120 MILS) | | | | 570.00 |
| 0138 | 4710000000-E THERMOPLAST IC PAVEMENT MARKINGLINES (24", 120 MILS) | | | | 4,060.00 |
| | | | | | |

Project(s): NHS-0070(154) Contract ID: C203955

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| + | r: 3/60 - S. T. Wooten Corp | | | | |
|---------------|--|-------------------------|--------------------------------|----------------------|-------------|
| Line No. | | Approx. Quantity - | | Unit Price | Bid Amount |
| | | | and Units | Dollars Cts | Dollars Ct |
| 0139 | 4721000000-E THERMOPLAST IC PAVEMENT MARKINGCHARACTER (120 MILS) | EA | 24.000 | 120.00000 | 2,880.00 |
| 0140 | 4725000000-E THERMOPLAST IC PAVEMENT MARKINGSYMBOL (90 MILS) | • | 98.000 98.000 | | 12,740.00 |
| 0141 | 4810000000-E PAINT PAVEMENT MARKING LINES (4") | LF | 16,133.000 | 0.25000 | 4,033.25 |
| 0142 | 4820000000-E PAINT PAVEMENT MARKING LINES (8") | LF | 222.000 | 1.00000 | 222.00 |
| 0143 | 4835000000-E PAINT PAVEMENT MARKING LINES (24") | LF | 137.000 | 3.00000 | 411.00 |
| | 4845000000-N PAINT PAVEMENT MARKING SYMBOL | EA | 13.000 | 65.00000 | 845.00 |
| 0145 | 4847000000-E POLYUREA PAVEMENT MARKING LINES (4", ********) (HIGHLY REFLECTIVE ELEMENTS) | LF | 1,116.000 1,116.000 | 5.00000 | 5,580.00 |
| 0146 | 4900000000-N PERMANENT RAISED PAVEMENT MARKERS | EA | 6.000 | | 600.00 |
| | 4905000000-N SNOWPLOWABL E PAVEMENT MARKERS | EA | 800.000 | | 21,600.00 |
| | 4935000000-N FLEXIBLE DELINEATORS (CRYSTAL) | EA | 76.000 76.000 | | 4,712.00 |
| | 494000000-N FLEXIBLE DELINEATORS (YELLOW) | EA | 64.000 64.000 | 65.00000 | 4,160.00 |

State of NC Date: 05-23-17 Revised: 06-13-17

Dept of Transportation

Project(s): NHS-0070(154) Contract ID: C203955 Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| Line No. | | | Approx. | Unit Price | Bid Amount |
|---------------|---|---------------------------|---------------------------|---------------|-------------|
| NO. | | | Quantity and Units | Dollars Cts | Dollars Ct |
| | 5325200000-E 2" WA LINE | TER LF | 12.000 12.000 | 73.00000 | 876.00 |
| | 5325600000-E 6" WA LINE | TER LF | 85.000 | 55.00000 | 4,675.00 |
| | 5325800000-E 8" WA LINE | TER LF | 4,450.000 4,450.000 | 30.50000 | 135,725.00 |
| 0153 | 5326000000-E 10 " W LINE | ATER LF | 5,402.000 5,402 | 37.00000 | 199,874.00 |
| | 5326200000-E 12 " W LINE | IATER LF | 4,224.000 | 38.00000 | 160,512.00 |
| 0155 | 5329000000-E DUCTI IRON WATER PIPE FITTINGS | LE LB | 13,510.000 | 9.00000 | 121,590.00 |
| 0156 | 5536000000-E 2" VA | LVE EA | 1.000 | 1,125.00000 | 1,125.00 |
| 0157 | 5540000000-E 6" VA | LVE EA | 2.000 | 1,500.00000 | 3,000.00 |
| 0158 | 5546000000-E 8" VA | LVE EA | 5.000 5.000 | 2,100.00000 | 10,500.00 |
| 0159 | 5552000000-E 10 " V | /ALVE EA | 4.000 | 2,700.00000 | 10,800.00 |
| 0160 | 5558000000-E 12 " V | /ALVE EA | 1.000 | 3,500.00000 | 3,500.00 |
| | 5571800000-E 8" TA VALVE | APPING EA | 1.000 | 4,600.00000 | 4,600.00 |

Project(s): NHS-0070(154) Contract ID: C203955

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| + | | | | |
|----------------------------------|---|-------------------------|-------------------------------|-------------|
| Line Item No. Description | | Approx. Quantity | Unit Price | Bid Amount |
| İ | i I | and Units | Dollars Cts | Dollars Ct |
| | 5589200000-E 2" AIR RELEASE VALVE | 2.000 EA | 4,700.00000 | 9,400.00 |
| | 5648000000-N RELOCATE WATER METER | 4.000 EA | 1,200.00000 | 4,800.00 |
| | 5649000000-N RECONNECT WATER METER | 2.000 EA | 1,400.00000 | 2,800.00 |
| | 5672000000-N RELOCATE FIRE HYDRANT | 4.000 EA | 3,800.00000 3,800.00000 | 15,200.00 |
| | 5709100000-E 2" FORCE MAIN SEWER | 476.000 LF | 20.00000 | 9,520.00 |
| | 5709300000-E 6" FORCE MAIN SEWER | 60.000 LF | 86.00000 86.00000 | 5,160.00 |
| | 5709400000-E 8" FORCE MAIN SEWER | | 54.00000 | 159,678.00 |
| 0169 | 5769000000-E DUCTILE IRON SEWER PIPE FITTINGS | | 9.00000 9.00000 | 36,270.00 |
| | 5775000000-E 4' DIA UTILITY MANHOLE | 2.000 EA | 1,800.00000 1,800.00000 | 3,600.00 |
| | 5781000000-E UTILITY MANHOLE WALL, 4' DIA | 2.000 LF | 365.00000 | 730.00 |
| | 579800000-E ABANDON **" UTILITY PIPE (2") | | 0.01000 | 5.30 |
| | 580000000-E ABANDON 6" UTILITY PIPE | 165.000 LF | 0.01000 | 1.65 |
| + | | | | |

Project(s): NHS-0070(154) Contract ID: C203955

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| brade: | c: 3/60 - S. T. Wooten Corp | poracion | | 1 |
|----------------|---|--------------------------|------------------------|-----------------------------|
| Line No. | • | Approx. Quantity | Unit Price | Bid Amount |
| | _ | and Units | Dollars Cts | Dollars Ct |
| | 5801000000-E ABANDON 8" UTILITY PIPE | 7,435.000 LF | | 74.35 |
| | 5802000000-E ABANDON 10" UTILITY PIPE | 5,353.000 LF | 0.01000 | 53.53 53.53 |
| | 5804000000-E ABANDON 12" UTILITY PIPE | 4,092.000 LF | 0.01000 | 40.92 |
| | 5816000000-N ABANDON UTILITY MANHOLE | 1.000 EA | 1,100.00000 | 1,100.00 |
| | 5828000000-N REMOVE UTILITY MANHOLE | 1.000 EA | 1,100.00000 | 1,100.00 |
| | 6000000000-E TEMPORARY SILT FENCE | 27,500.000 LF | 2.40000 | 66,000.00 66,000.00 |
| 0181 | • | 2,680.000 TON | 8.25000 | 22,110.00 |
| 0182 | 6009000000-E STONE FOR EROSION CONTROL, CLASS B | 5,375.000 TON | 8.25000 | 44,343.75 |
| | 6012000000-E SEDIMENT CONTROL STONE | 4,255.000 TON | 5.80000 | 24,679.00 24,679.00 |
| | 6015000000-E TEMPORARY MULCHING | 179.500 ACR | 675.00000 | 121,162.50 121,162.50 |
| | 6018000000-E SEED FOR TEMPORARY SEEDING | 7,800.000 LB | 3.00000 | 23,400.00 |
| | 6021000000-E FERTILIZER FOR TEMPORARY SEED-ING | 39.000 TON | 1,100.00000 | 42,900.00 |
| | | | | ' |

Project(s): NHS-0070(154) Contract ID: C203955

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| + | : 3760 - S. 1. WOOLEN COI | : | | | |
|--------------------|--|-------------------|--------------------|---------------------|-------------|
| Line No. | | | Approx. uantity | Unit Price | Bid Amount |
| | İ | | nd Units | Dollars Cts | Dollars Ct |
| | 6024000000-E TEMPORARY SLOPE DRAINS | LF | 5,000.000 | 2.50000 | 12,500.00 |
| | 6029000000-E SAFETY FENCE | LF | 2,000.000 | 2.50000 | 5,000.00 |
| | 603000000-E SILT EXCAVATION | CY | 15,200.000 | 1.45000 | 22,040.00 |
| | 6036000000-E MATTING FOR EROSION CONTROL | SY | 22,500.000 | 2.00000 | 45,000.00 |
| 0191 | | SY | 1,100.000 | 5.00000 | 5,500.00 |
| | 6042000000-E 1/4" HARDWARE CLOTH | LF | 800.000 | | 2,400.00 |
| | 6043000000-E LOW PERMEABILITY GEOTEXTILE | SY | 500.000 | | 2,000.00 |
| | 6045000000-E **" TEMPORARY PIPE (24") | LF | 110.000 | 25.00000 | 2,750.00 |
| | 6069000000-E STILLING BASINS | CY | 686.000 | | 19,208.00 |
| 0196 | | LF | 8,400.000 | | 28,560.00 |
| | 6071013000-E WATTLE BARRIER | LF | 1,900.000 | | 11,400.00 |
| | 6071020000-E POLYACRYLAM IDE (PAM) | LB | 5,620.000 | 15.00000 | 84,300.00 |
| + | | | | | |

Project(s): NHS-0070(154) Contract ID: C203955

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| Line No. | | Approx. Quantity | Unit Price | Bid Amount |
|---------------------|--|-------------------------|--------------------------|-------------|
| | | and Units | Dollars Cts | Dollars Ct |
| | 6071030000-E COIR FIBER BAFFLE | | 5.00000 | 27,500.00 |
| | 6071050000-E **" SKIMMER (1-1/2") | | 2,600.00000 | 28,600.00 |
| ' 0201 | | 4.000 EA | 3,700.00000 | 14,800.00 |
| | 6084000000-E SEEDING & MULCHING | | 1,850.00000 | 233,100.00 |
| ' 0203 | | 67.000 ACR | 95.00000 95.00000 | 6,365.00 |
| | 6090000000-E SEED FOR REPAIR SEEDING | | 5.75000 | 10,637.50 |
| | 6093000000-E FERTILIZER FOR REPAIR SEEDING | 5.500 TON | 1,150.00000 | 6,325.00 |
| | 6096000000-E SEED FOR SUPPLEMENTAL SEEDING | 2,950.000 LB | 3.50000 | 10,325.00 |
| | 6108000000-E FERTILIZER TOPDRESSING | 88.000 TON | 750.00000 | 66,000.00 |
| | • | 382.000 LF | 65.50000 | 25,021.00 |
| | 6114500000-N SPECIALIZED HAND MOWING | | 55.00000 | 550.00 |
| | 6117000000-N RESPONSE FOR EROSION CONTROL | | 225.00000 | 28,125.00 |

State of NC Date: 05-23-17 Revised: 06-13-17

Dept of Transportation

Project(s): NHS-0070(154) Contract ID: C203955

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| Bidder: 3760 - S. T. Wooten Corporation | | | | | | | |
|---|--|-------------------|-----------------------|---------------|----------------------|--|--|
| Line No. | • | | Approx. Quantity | Unit Price | Bid Amount | | |
| NO. | Description | | and Units | Dollars Cts | Dollars Ct | | |
| | 6120000000-E CULVERT DIVERSION CHANNEL | CY | 160.000 | 15.00000 | 2,400.00 | | |
| 0212 | | ACR | 0.100 | 10,000.00000 | 1,000.00 | | |
| 0213 | 6132000000-N GENERIC EROSION CONTROL ITEM CONCRETE WASHOUT STRUCTURE | EA | 10.000 | 2,100.00000 | 21,000.00 | | |
| | 706000000-E SIGNAL CABLE | LF | 9,560.000 9 | 2.25000 | 21,510.00 | | |
| 0215 | 7108000000-E VEHICLE SIGNAL HEAD (12", 1 SECTION) | EA | 8.000 8.000 | 725.00000 | 5,800.00 | | |
| 0216 | 7120000000-E VEHICLE SIGNAL HEAD (12", 3 SECTION) | EA | 37.000 | 685.00000 | 25,345.00 | | |
| 0217 | 7132000000-E VEHICLE SIGNAL HEAD (12", 4 SECTION) | EA | 4.000 | 875.00000 | 3,500.00 | | |
| 0218 | 7144000000-E VEHICLE SIGNAL HEAD (12", 5 SECTION) | EA | 1.000 | 1,150.00000 | 1,150.00 | | |
| | 7264000000-E MESSENGER CABLE (3/8") | LF | 2,200.000 | 3.00000 | 6,600.00 | | |
| 0220 | | LF | 3,797.000 3,797 | 0.50000 | 1,898.50 | | |
| 0221 | 7300000000-E UNPAVED TRENCHING (********) (1, 2") | LF | 6,352.000 | 4.05000 | 25,725.60 | | |

Project(s): NHS-0070(154) Contract ID: C203955 Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| Biddei ' | r: 3760 - S. T. Wooten Corp | pora | ation | | 1 | | |
|---------------------|--|-----------------------|------------|----------------------|----------------|--|--|
| + Line No. | • | Approx. Quantity - | | Unit Price | Bid Amount | | |
| į | | I | and Units | Dollars Cts | Dollars Ct | | |
| 0222 | 7300000000-E UNPAVED TRENCHING (********) (2, 2") | LF | 860.000 | | 3,870.00 | | |
| 0223 | 7300000000-E UNPAVED TRENCHING (********) (3, 2") | LF | 250.000 | 5.00000 | 1,250.00 | | |
| 0224 | 7300100000-E UNPAVED TRENCHING FOR TEMP- ORARY LEAD-IN | LF | 850.000 | 5.00000 | 4,250.00 | | |
| 0225 | 7301000000-E DIRECTIONAL DRILL (********) (1, 2") | LF | 1,924.000 | 16.00000 | 30,784.00 | | |
| | 7324000000-N JUNCTION BOX (STANDARD SIZE) | EA | 27.000 | 250.00000 | 6,750.00 | | |
| 0227 | 7348000000-N JUNCTION BOX (OVER-SIZED, HEA-VY DUTY) | EA | 11.000 | 450.00000 | 4,950.00 | | |
| 0228 | | EA | 7.000 | 900.00000 | 6,300.00 | | |
| | 7372000000-N GUY ASSEMBLY | EA | 14.000 | 275.00000 | 3,850.00 | | |
| | 7408000000-E 1" RISER WITH WEATHERHEAD | EA | 2.000 | 350.00000 | 700.00 | | |
| | 7420000000-E 2" RISER WITH WEATHERHEAD | EA | 6.000 | 330.00000 | 1,980.00 | | |
| | 7444000000-E INDUCTIVE LOOP SAWCUT | LF | 2,800.000 | 5.75000 | 16,100.00 | | |
| 0233 | 7456000000-E LEAD-IN CABLE (**********) (14-2) | LF | 13,070.000 | 1.20000 | 15,684.00 | | |
| · | | | | | | | |

Project(s): NHS-0070(154) Contract ID: C203955

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| Item Description | | Approx. Quantity | Unit Price | Bid Amount |
|--|--|-----------------------|-------------------------------|--|
| l | İ | and Units | Dollars Cts | Dollars Ct |
| l | | 1.000 | 1,500.00000 | 1,500.00 |
| 7481200000-N LUMINAIRE ARM FOR VIDEO SYSTEM | EA | 4.000 4.000 | 750.00000 | 3,000.00 |
| 7481240000-N CAMERA WITHOUT INTERNAL LOOP EMULATOR PROCESSING UNIT | EA | 4.000 | 2,192.00000 2,192.00000 | 8,768.00 |
| 7481260000-N EXTERNAL LOOP EMULATOR PRO- CESSING UNIT | EA | 1.000 1.000 | 5,300.00000 | 5,300.00 |
| 7481280000-N RELOCATE CAMERA SENSOR UNIT | EA | 4.000 | 185.00000 | 740.00 |
| ONS CABLE (**FIBER) (12) | | 4,743.000 | 1.75000 | 8,300.25 |
| 7528000000-E DROP CABLE | LF | 3.000 3.000 | 10.00000 | 30.00 |
| 7540000000-N SPLICE ENCLOSURE | EA | 4.000 | 1,150.00000 | 4,600.00 |
| 7541000000-N MODIFY SPLICE ENCLOSURE | EA | 1.000 | 2,500.00000 | 2,500.00 |
| T CENTER | EA | 3.000 3.000 | 1,050.00000 | 3,150.00 |
| TRANSCEIVER, SELF-HEALING | | 3.000 | 585.00000 | 1,755.00 |
| 7566000000-N DELINEATOR MARKER | EA | 9.000 9.000 | 75.00000 | 675.00 |
| | Description 7481000000-N SITE SURVEY 7481200000-N LUMINAIRE ARM FOR VIDEO SYSTEM 7481240000-N CAMERA WITHOUT INTERNAL LOOP EMULATOR PROCESSING UNIT 7481260000-N EXTERNAL LOOP EMULATOR PRO- CESSING UNIT 7481280000-N RELOCATE CAMERA SENSOR UNIT 7516000000-E COMMUNICATI ONS CABLE (**FIBER) (12) 7528000000-E DROP CABLE 7541000000-N SPLICE ENCLOSURE 7541000000-N INTERCONNEC T CENTER 7564100000-N FIBER-OPTIC TRANSCEIVER, SELF-HEALING RING | Description | Description | Quantity Dollars Cts 7481000000-N SITE SURVEY 1.000 1,500.00000 EA |

Project(s): NHS-0070(154) Contract ID: C203955 Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| Bidder: 3760 - S. T. Wooten Corporation | | | | | | |
|---|---|-------------------|----------------------|-------------------------------|-------------------------|--|
| Line No. | • | | Approx. Quantity | Unit Price | Bid Amount | |
| + | | i | and Units | Dollars Cts | Dollars Ct | |
| | 7575142060-N MODIFY RADIO INSTALLATION | EA | 2.000 | 1,500.00000 | 3,000.00 | |
| | 7576000000-N METAL STRAIN SIGNAL POLE | EA | 7.000 | 7,800.00000 7,800.00000 | 54,600.00 | |
| 0248 | 7613000000-N SOIL TEST | EA | 7.000 | | 5,495.00 | |
| | 7614100000-E DRILLED PIER FOUNDATION | CY | 64.000 | 850.00000 | 54,400.00 | |
| | 7636000000-N SIGN FOR SIGNALS | EA | 8.000 | 270.00000 | 2,160.00 2,160.00 | |
| 0251 | 7642200000-N TYPE II PEDESTAL WITH FOUND- ATION | EA | 7.000 | 475.00000 | 3,325.00 3,325.00 | |
| 0252 | 7642300000-N TYPE III PEDESTAL WITH FOUND- ATION | EA | 4.000 | 675.00000 | 2,700.00 2,700 | |
| | 768400000-N SIGNAL CABINET FOUNDATION | EA | 3.000 | 900.00000 | 2,700.00 | |
| 0254 | 7756000000-N CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED) | • | 3.000 | 12,500.00000 | 37 , 500.00 | |
| 0255 | 7768000000-N CONTROLLER WITH CABINET (TYPE 2070L, | | 1.000 | | 11,500.00 | |
| | 7780000000-N DETECTOR CARD (TYPE 2070L) | EA | | | 3,120.00 | |
| | 7901000000-N CABINET BASE EXTENDER | EA | | 1,200.00000 1,200.00000 | 3,600.00 | |

State of NC Date: 05-23-17 Revised: 06-13-17

Dept of Transportation

Project(s): NHS-0070(154) Contract ID: C203955

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| | Bidde: | r: 3760 - S. T. Wooten Corp | poration | | |
|---|-------------|--|---------------|----------------------|------------------------|
| and Units Dollars Cts Dollars C 7960000000-N METAL POLE 7.000 760.00000 5,320.0 1 | | • | | Unit Price | Bid Amount |
| 0258 FOUNDATION REMOVAL | + | | _ | Dollars Cts | , Dollars Ct |
| 0259 REMOVAL | | | | 760.00000 | 5,320.00 |
| 0260 SIGNAL ITEM RELOCATE 1.000 3,500.00000 3,500.00 EMBRGENCY VEHICLE PHASE | | REMOVAL | ' | 510.00000 | 3,570.00 |
| 0261 SIGNAL ITEM RELOCATE 2.000 3,500.00000 7,000.00 | 0260 | SIGNAL ITEM RELOCATE EMERGENCY VEHICLE PHASE | | 3,500.00000 | 3,500.00 |
| | 0261 | SIGNAL ITEM RELOCATE EMERGENCY VEHICLE | | 3,500.00000 | 7,000.00 |
| ### Section 0002 CULVERT ITEMS Alt Group | 0262 | SIGNAL ITEM EMERGENCY | | 5.00000 | 3,750.00 |
| Alt Group 8126000000-N CULVERT | | Section 0001 Total | | | 18,392,465.70 |
| | + Sectio | on 0002 CULVERT ITEM | S | | |
| 0263 EXCAVATION, STA ***** LUMP LUMP 36,500.0 (26+94.23 - Y09A-) | | Alt Group | | | |
| 0264 EXCAVATION, STA ***** LUMP LUMP 43,300.0 (78+05.84 -L-) | 0263 | EXCAVATION, STA ***** | LUMP | LUMP | 36,500.00 |
| 0265 CONDITIONING MATER-IAL, 119.600 50.00000 5,980.0 BOX CULVERT TON 8196000000-E CLASS A 0266 CONCRETE (CULVERT) 180.000 1,295.00000 233,100.0 | 0264 | EXCAVATION, STA ***** | LUMP | LUMP | 43,300.00 |
| 0266 CONCRETE (CULVERT) 180.000 1,295.00000 233,100.0 | 0265 | CONDITIONING MATER-IAL, | | 50.00000 | 5,980.00 |
| | | | | 1,295.00000 | 233,100.00 |

Dept of Transportation Date: 05-23-17 Revised: 06-13-17

Contract ID: C203955 Project(s): NHS-0070(154)

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation | Approx. | Unit Price | Bid Amount | | Quantity |-----| and Units | Dollars | Cts | Dollars | Ct| |Line| Item | No.| Description Section 0003 WALL ITEMS Alt Group +----+

| | | | | 2,125,100.00 |
|--|--------------|----------------|---------------|--------------|
| 8801000000-E MSE 0269 RETAINING WALL NO **** (2) | SF | 9,200.000 | 79.00000 | 726,800.00 |
| 8801000000-E MSE 0268 RETAINING WALL NO **** (1) | SF | 17,700.000 | 79.00000 | 1,398,300.00 |

Section 0004 STRUCTURE ITEMS

Alt Group

| 8091000000-N FOUNDATION 0270 EXCAVATION FOR BENT** AT STATION ************* (2, | LUMP | LUMP | 12,300.00 |
|--|-------------------------|--------------------|-------------------------|
| 8112730000-N PDA TESTING | 2.000 EA | 4,300.00000 | 8,600.00 8,600.00 |
| 8147000000-E REINFORCED 0272 CONCRETE DECK SLAB | 19,091.000 SF | 30.00000 | 572,730.00 |
| 8161000000-E GROOVING 0273 BRIDGE FLOORS | 17,126.000 SF | 0.57000 | 9,761.82 |
| 8182000000-E CLASS A 0274 CONCRETE (BRIDGE) | 461.800 CY | 615.00000 | 284,007.00 |

Project(s): NHS-0070(154) Contract ID: C203955

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| r: 3760 - S. T. Wooten Corp | | | | |
|---|--|------------|---------------------------------------|--------------------|
| Item Description | Qu | antity | Unit Price Dollars Cts | |
| 8210000000-N BRIDGE APPROACH SLABS, STATION************** (32+25.84 -YEB01-) | LUMP | | LUMP | 33,200.00 |
| STEEL (BRIDGE) | | 82,025.000 | | 77 , 923.75 |
| 8280000000-E APPROX LBS STRUCTURALSTEEL | LUMP | | LUMP | 1,750,000.00 |
| 8328200000-E PILE DRIVING EQUIPMENT SETUP FOR *** STEEL PILES (HP 12 X 53) | EA | 21.000 | | 15,645.00 |
| 8328400000-E PILE DRIVING EQUIPMENT SETUP FOR *** GALVANIZED STEEL PILES (PP 18 X 0.50) | EA | 42.000 | | 18,900.00 |
| 8364000000-E HP12X53 STEEL PILES | LF | 2,250.000 | 35.75000 | 80,437.50 |
| 8387000000-E PP 18 X 0.50 GALVANIZED STEEL PILES | LF | 3,310.000 | | 331,000.00 |
| 8393000000-N PILE REDRIVES | EA | 34.000 | | 3,468.00 |
| 8503000000-E CONCRETE BARRIER RAIL | LF | 962.320 | | 75,060.96 |
| 8531000000-E 4" SLOPE PROTECTION | SY | 80.000 | | 11,880.00 |
| 8608000000-E RIP RAP CLASS II (2'-0" THICK) | TON | 923.000 | | 76,609.00 |
| | Item Description 8210000000-N BRIDGE APPROACH SLABS, STATION*********** (32+25.84 -YEB01-) 8217000000-E REINFORCING STEEL (BRIDGE) 828000000-E APPROX LBS STRUCTURALSTEEL 8328200000-E PILE DRIVING EQUIPMENT SETUP FOR *** STEEL PILES (HP 12 X 53) 8328400000-E PILE DRIVING EQUIPMENT SETUP FOR *** GALVANIZED STEEL PILES (PP 18 X 0.50) 8364000000-E HP12X53 STEEL PILES 8387000000-E PP 18 X 0.50 GALVANIZED STEEL PILES 8393000000-R PILE REDRIVES 8503000000-E CONCRETE BARRIER RAIL 8531000000-E RIP RAP CLASS II (2'-0" THICK) | Item | Item | Ttem |

Contract ID: C203955 Project(s): NHS-0070(154)

Letting Date: 06-20-17 Call Order: 003 Bidder: 3760 - S. T. Wooten Corporation

| + | | | | |
|-----------------|--|---------------------------------|-------------------------|-------------------------|
| Line | Item Description | Approx. Unit Price Quantity | | Bid Amount |
| NO. | | and Units | Dollars Cts | Dollars Ct |
| • | 8622000000-E GEOTEXTILE FOR DRAINAGE | 1,025.000 SY | 3.15000 | 3,228.75 3,228.75 |
| | 8654000000-N DISC BEARINGS | LUMP | LUMP | 53,500.00 |
| | 8706000000-N EXPANSION JOINT SEALS | LUMP | LUMP | |
| + | Section 0004 Total | | | 3,484,851.78 |
| + | Bid Total | | | 24,370,634.28 + |

NON-COLLUSION AND DEBARMENT CERTIFICATION

The bidder certifies that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid, and that the bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor. In addition, submitting this electronic bid constitutes the bidder's certification of Status under penalty of perjury under the laws of the United States and in accordance with the Debarment Certification on file with the Department.

By submitting this bid, the bidder certifies to the best of his knowledge and belief that he and his principals:

- . Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property;
- c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph b. of this certification; and
- d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

Where the prospective bidder is unable to certify to any of the statements in this certification, the bidder shall submit an explanation in the blanks provided herein. The explanation will not necessarily result in denial of participation in a contract.

Explanation:

NOT ANSWERED

NOT ANSWERED

NOT ANSWERED

NOT ANSWERED

If the prequalified bidder's status changes, he shall immediately submit a new fully executed non-collusion affidavit and debarment certification with an explanation of the change to the Contract Office prior to submitting the bid.

Failure to furnish a certification or an explanation will be grounds for rejection of a bid

AWARD LIMITS ON MULTIPLE PROJECTS

By answering YES to this statement, the bidder acknowleges that they are using the award limits on multiple projects. No

A bidder who desires to bid on more than one project on which bids are to be opened on the same date, and who also desires to avoid receiving an award of more projects than he is equipped to handle, may bid on any number of projects but may limit the total amount of work awarded to him on selected projects by completing the AWARD LIMITS ON MULTIPLE PROJECTS.

The Award Limits on Multiple Projects must be filled in on each project bid for which the Bidder desires protection.

It is the desire of the Bidder to be awarded contracts, the value of which

will not exceed a total of NOT ANSWERED for those

projects indicated herein, for which bids will be opened on (MM/DD/YY)

The Award Limits shall apply to the following projects:

Contract Number

County

NOT ANSWERED

NOT ANSWERED

NOT ANSWERED

NOT ANSWERED

NOT ANSWERED

NOT ANSWERED

It is agreed that if I am (we are) the low Bidder(s) on indicated projects, the total value of which is more than the above stipulated award limits, the Board of Transportation will award me (us) projects from among those indicated that have a total value not to exceed the award limit and will result in the lowest total bids to the Department of Transportation.

NORTH CAROLINA STATE DEPARTMENT OF TRANSPORTATION DATE:05-23-17 DBE COMMITMENT ITEMS PAGE: 29

Partial Only

PROPOSAL: C203955 LETTING: L170620 CALL: 003 VENDOR: 3760 S. T. Wooten Corporation

LINE ITEM ITEM UNIT SUBCONTRACTOR SUBCONTRACTOR EXTENDED NO. NO. DESC. TYPE QUANTITY UNIT PRICE AMOUNT ______ DBE SUBCONTRACTOR: 12278 CLIFTON CONSTRUCTION CO., INC. Will Use Ouote: Yes 0001 0000100000-N MOBILIZATION LS 1.000 6000.00000 6000.00 Partial Only 0051 2022000000-E SUBDRAIN EXC CY 168.000 25.00000 4200.00 0052 2026000000-E GEOTEXTILE F SY 500.000 9.00000 4500.00 0053 2036000000-E SUBDRAIN COA CY 84.000 60.00000 5040.00 0054 2044000000-E 6" PERF SUBD LF 500.000 14.00000 7000.00 0055 2070000000-N SUBDRN PIPE EA 1.000 350.00000 350.00 0056 2077000000-E 6" OUTLET PI LF 6.000 30.00000 180.00 DBE COMMITMENT TOTAL FOR SUBCONTRACTOR: 27,270.00 DBE COMMITMENT TOTAL FOR VENDOR (SubContractor) 27,270. DBE SUBCONTRACTOR: 4898 BULLINGTON CONSTRUCTION INC Will Use Quote: Yes 0080 3000000000-N IMPACT ATTEN EA 4.000 14950.00000 59800.00 0081 3030000000-E STL BM GUARD LF 2375.000 16.25000 38593.75 0082 3105000000-N SBGR TERM SE EA 2.000 125.00000 250.00 0083 3150000000-N ADDIT GUARDR EA 10.000 44.00000 440.00 0084 3210000000-N GR ANCHOR TY EA 2.000 600.00000 1200.00 0085 3270000000-N GR ANCHOR TY EA 3.000 1850.00000 5550.00 0086 3317000000-N GR ANCHOR TY EA 7.000 1700.00000 11900.00 0087 336000000-E REMOVE EXIST LF 440.000 2.00000 880.00 0088 3503000000-E WOVEN WIRE F LF 6360.000 3.25000 20670.00 0089 3506000000-E WOVEN WIRE F LF 6360.000 3.25000 20670.00 0089 3515000000-E 4" TIMBER PO EA 386.000 16.00000 6176.00 0090 3515000000-E S" TIMBER PO EA 127.000 38.00000 4826.00 0091 3533000000-E CHN LK FENCE LF 5310.000 16.00000 84960.00 0092 3539000000-E MET LINE PST EA 447.000 95.00000 42465.00 0093 3545000000-E MET TERM PST EA 37.000 160.00000 5920.00 0001 0000100000-N MOBILIZATION LS 1.000 4351.00000 4351.00 Partial Only 0094 3578000000-N GENERIC FENC EA 1.000 6500.00000 6500.00 DBE COMMITMENT TOTAL FOR SUBCONTRACTOR: 294,481.75
DBE COMMITMENT TOTAL FOR VENDOR (SubContractor) 294,481 DBE SUBCONTRACTOR: 3538 BONN-J CONTRACTING INC OF FLORIDA Will Use Ouote: Yes 0001 0000100000-N MOBILIZATION LS 1.000 37000.00000 37000.00 Partial Only 0268 8801000000-E MSE RETAIN W SF 17700.000 29.53000 522681.00

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______ LINE ITEM ITEM UNIT SUBCONTRACTOR SUBCONTRACTOR EXTENDED NO. NO. DESC. TYPE QUANTITY UNIT PRICE AMOUNT UNIT SUBCONTRACTOR SUBCONTRACTOR EXTENDED ______ 0269 8801000000-E MSE RETAIN W SF 9200.000 30.17000 277564.00 Partial Only DBE COMMITMENT TOTAL FOR SUBCONTRACTOR: 837,245.00 DBE COMMITMENT TOTAL FOR VENDOR (SubContractor) 837,245 DBE SUBCONTRACTOR: 15521 4 D CONSTRUCTION Will Use Ouote: Yes 0272 8147000000-E REINF CONCRE SF 19091.000 1.10800 21152.83 Partial Only Installing Metal Decking DBE COMMITMENT TOTAL FOR SUBCONTRACTOR:
DBE COMMITMENT TOTAL FOR VENDOR (SubContractor) _____ 21,152.83 21,152. DBE SUBCONTRACTOR: 3080 CURTIN TRUCKING & DRAINAGE, INC. Will Use Quote: Yes 0123 4465000000-N TEMPORARY CR EA 5.000 7500.00000 37500.00 0125 4490000000-E PORT CONC BA LF 721.000 44.95000 32408.95 DBE COMMITMENT TOTAL FOR SUBCONTRACTOR: 69,908.95 DBE COMMITMENT TOTAL FOR VENDOR (SubContractor) 69,908. DBE SUBCONTRACTOR: 2656 National Erectors, Inc Will Use Ouote: Yes 0272 8147000000-E REINF CONCRE SF 19091.001 1.23900 23653.75 Partial Only Tying Reinforcing Steel 0275 8210000000-N BRG APPR SLA LS 1.000 1995.48000 1995.48 Partial Only Tying Reinforcing Steel 0276 8217000000-E REINF STEEL LB 82025.000 0.21000 17225.25 Partial Only Tying Reinforcing 0283 850300000-E CONCRETE BAR LF 962.332 3.91710 3769.55 Partial Only Tying Reinforcing Steel DBE COMMITMENT TOTAL FOR SUBCONTRACTOR: _____ 46,644.03 DBE COMMITMENT TOTAL FOR VENDOR (SubContractor) 46,644. DBE SUBCONTRACTOR: 5124 R. L. THOMPSON CO., INC. Will Use Quote: Yes 0013 0318000000-E FND CONDIT M TON 1732.000 5.28000 9144.96 Haul Only 0036 1077000000-E #57 STONE TON 5.000 5.28000 26.40 Haul Only 0038 1099700000-E CLASS IV SUB TON 20300.000 5.28000 107184.00 Haul Onlv 0039 1111000000-E CLASS IV AGG TON 6750.000 5.28000 35640.00 Haul Only

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| -E AGGREGATE B. | A TON | 3354.000 | 5.28000 | 17709.12 |
|---|---|--|--|---|
| -E INCIDENTAL | S TON | 200.000 | 5.28000 | 1056.00 |
| -E RIP RAP, CL | A TON | 730.000 | 6.28000 | 4584.40 |
| -E RIP RAP, CL | A TON | 380.000 | 6.28000 | 2386.40 |
| -E MSE RETAIN ' | W SF | 17700.000 | 6.42200 | 113669.40 |
| -E MSE RETAIN | W SF | 9200.000 | 6.12000 | 56304.00 |
| -E RIP RAP II | (TON | 923.000 | 12.28000 | 11334.44 |
| -N GRADING | LS | 1.000 | 222206.00000 | 222206.00 |
| -E UNDERCUT EX | C CY | 22600.000 | 3.00900 | 68003.40 |
| -E DRAINAGE DI | T CY | 2900.000 | 6.00000 | 17400.00 |
| -E SELECT GRAN | U CY | 37300.000 | 3.00000 | 111900.00 |
| -E SHALLOW UND | E CY | 10520.000 | 4 20000 | 44184.00 |
| | _ 01 | 10020.000 | 1.20000 | 11101100 |
| TMENT TOTAL FOR | SUBCO | NTRACTOR: | - 8 | 22,732.52 |
| TMENT TOTAL FOR | SUBCOI VENDOI | NTRACTOR: R (SubContracto | - 8 | 22 , 732.52 |
| TMENT TOTAL FOR TMENT TOTAL FOR OR: 4761 TRAFFIC Yes | SUBCONTI | NTRACTOR: R (SubContracto ROL SAFETY SERV | - 8 r) TICES, INC. | 22,732.52 822,73 |
| TMENT TOTAL FOR TMENT TOTAL FOR OR: 4761 TRAFFIC Yes | SUBCONTI | NTRACTOR: R (SubContracto ROL SAFETY SERV | r) ICES, INC. | 22,732.52 822,73 |
| TMENT TOTAL FOR TMENT TOTAL FOR OR: 4761 TRAFFIC Yes | SUBCONTI C CONTI I SF (LF I SF | NTRACTOR: R (SubContracto ROL SAFETY SERV 214.000 232.000 256.000 | 7.50000 20.00000 10.00000 | 22,732.52 822,73 |
| TMENT TOTAL FOR TMENT TOTAL FOR OR: 4761 TRAFFI Yes -E WORK ZONE S -E BARRICADES -E WORK ZONE S TMENT TOTAL FOR | SUBCONVENDOR C CONTR I SF (LF I SF SUBCONVENDOR | NTRACTOR: R (SubContracto ROL SAFETY SERV 214.000 232.000 256.000 NTRACTOR: R (SubContracto | 7.50000 20.00000 10.00000 | 1605.00 4640.00 2560.00 ,805.00 |
| TMENT TOTAL FOR TMENT TOTAL FOR OR: 4761 TRAFFI Yes -E WORK ZONE S -E BARRICADES -E WORK ZONE S TMENT TOTAL FOR TMENT TOTAL FOR OR: 11317 TRAFF Yes -N DRUMS | SUBCONTION C CONTINUE I SF (LF I SF SUBCONTION VENDOR IC AND | NTRACTOR: R (SubContracto ROL SAFETY SERV 214.000 232.000 256.000 NTRACTOR: R (SubContracto SAFETY OF THE | 7.50000 20.00000 10.00000 | 1605.00 4640.00 2560.00 ,805.00 8,805. |
| TMENT TOTAL FOR TMENT TOTAL FOR OR: 4761 TRAFFIN Yes -E WORK ZONE S -E BARRICADES -E WORK ZONE S TMENT TOTAL FOR TMENT TOTAL FOR OR: 11317 TRAFF Yes -N DRUMS S Only -N CONES | SUBCONTION C CONTION I SF (LF I SF SUBCONTION VENDON IC AND | NTRACTOR: R (SubContracto ROL SAFETY SERV 214.000 232.000 256.000 NTRACTOR: R (SubContracto SAFETY OF THE 500.000 | 7.50000 20.00000 10.00000 r) | 1605.00 4640.00 2560.00 ,805.00 8,805. |
| TMENT TOTAL FOR TMENT TOTAL FOR OR: 4761 TRAFFI Yes -E WORK ZONE S -E BARRICADES -E WORK ZONE S TMENT TOTAL FOR TMENT TOTAL FOR OR: 11317 TRAFF Yes -N DRUMS S Only -N CONES S Only -E BARRICADES | SUBCON VENDOR C CONTR I SF (LF I SF SUBCON VENDOR VENDOR EA EA | NTRACTOR: R (SubContracto ROL SAFETY SERV 214.000 232.000 256.000 NTRACTOR: R (SubContracto SAFETY OF THE 500.000 100.000 | 7.50000 20.00000 10.00000 r) CAROLINAS LLC | 1605.00 4640.00 2560.00 ,805.00 8,805. |
| TMENT TOTAL FOR TMENT TOTAL FOR OR: 4761 TRAFFI Yes -E WORK ZONE S -E BARRICADES -E WORK ZONE S TMENT TOTAL FOR TMENT TOTAL FOR OR: 11317 TRAFF Yes -N DRUMS S Only -N CONES S Only -E BARRICADES | SUBCONTION C CONTINUE SF (LF I SF SUBCONTION VENDOR IC AND EA EA (LF | NTRACTOR: R (SubContractor ROL SAFETY SERV 214.000 232.000 256.000 NTRACTOR: R (SubContractor SAFETY OF THE 500.000 100.000 232.000 | 7.50000 20.00000 10.00000 r) CAROLINAS LLC 44.30000 18.14000 | 1605.00 4640.00 2560.00 ,805.00 8,805. |
| | DESC. -E AGGREGATE B. -E INCIDENTAL -E RIP RAP, CL. -E RIP RAP, CL. -E MSE RETAIN -E MSE RETAIN -E RIP RAP II -N GRADING -E UNDERCUT EXC -E DRAINAGE DI -E SELECT GRAN | DESC. TYPE | DESC. TYPE QUANTITY -E AGGREGATE BA TON 3354.000 -E INCIDENTAL S TON 200.000 -E RIP RAP, CLA TON 730.000 -E RIP RAP, CLA TON 380.000 -E MSE RETAIN W SF 17700.000 -E MSE RETAIN W SF 9200.000 -E RIP RAP II (TON 923.000 -N GRADING LS 1.000 -E UNDERCUT EXC CY 22600.000 -E DRAINAGE DIT CY 2900.000 -E SELECT GRANU CY 37300.000 | DESC. TYPE QUANTITY UNIT PRICE -E AGGREGATE BA TON 3354.000 5.28000 -E INCIDENTAL S TON 200.000 5.28000 -E RIP RAP, CLA TON 730.000 6.28000 -E RIP RAP, CLA TON 380.000 6.28000 -E MSE RETAIN W SF 17700.000 6.42200 -E MSE RETAIN W SF 9200.000 6.12000 -E RIP RAP II (TON 923.000 12.28000 -N GRADING LS 1.000 222206.00000 -E UNDERCUT EXC CY 22600.000 3.00900 -E DRAINAGE DIT CY 2900.000 6.00000 |

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| | NO. | | TYPE | SUBCONTRACTOR QUANTITY | UNIT PRICE | |
|-------|--|----------------|--------|-------------------------------|------------|---------------------------------------|
| | 4420000000-N | PORTABLE CHA | | 2.000 | 9394.00000 | 18788.00 |
| 0115 | artial Matls On 4405000000-E artial Matls On | WORK ZONE SI | SF | 580.000 | 9.07400 | 5262.92 |
| 0117 | | FLASHING ARR | EA | 2.000 | 2135.00000 | 4270.00 |
| | | NT TOTAL FOR S | | NTRACTOR: R (Supplier | | 103,040.42 \$61,824 |
| | SUBCONTRACTOR: Use Quote: Ye | | LOGIS' | TICS LLC | | |
| | 1489000000-E aul Only | ASP CONC BAS | TON | 5090.000 | 7.50000 | 38175.00 |
| 0044 | | ASP CONC BAS | TON | 8244.000 | 7.50000 | 61830.00 |
| | | NT TOTAL FOR S | | NTRACTOR: R (SubContractor | | 100,005.00 |
| | SUBCONTRACTOR: Use Quote: Ye | | RUMB ' | TRUCKING | | |
| | 1503000000-E aul Only | ASP CONC INT | TON | 9600.000 | 7.50000 | 72000.00 |
| | | NT TOTAL FOR S | | NTRACTOR: R (SubContractor | | 72,000.00 |
| | SUBCONTRACTOR: Use Quote: Ye | | PURY | EAR TRUCKING, IN | С. | |
| | 1523000000-E aul Only | ASP CONC SUR | TON | 10100.000 | 7.50000 | 75750.00 |
| | | NT TOTAL FOR S | | NTRACTOR: R (SubContractor | | 75,750.00 75,750. |
| TOTAI | DBE COMMITME | NT FOR VENDOR: | : | Entered: Required: | 10.00% or | 2437819.33 2437063.43 GOAL MET> |

THIS PROPOSAL CONTAINS THE FOLLOWING ERRORS/WARNINGS (IF ANY)

Item Warning: item 4400000000-E (Line# 0114) quantity overcommitted by DBE'
Item Warning: item 4410000000-E (Line# 0116) quantity overcommitted by DBE'
Item Warning: item 8147000000-E (Line# 0272) quantity overcommitted by Sing
Item Warning: item 8503000000-E (Line# 0283) quantity overcommitted by Sing
DBE Warning: DBEName National Erectors, not chosen from list (DBE #6)

This Bid contains 1 amendment files

00001 06-14-17 UNDERCUT & SELECT MATL QUANTITY UPDATES

I Hereby certify that I have the authority to submit this bid.

Electronic Bid Submission

By submitting this bid electronically, I hereby acknowledge that all requirements included in the hard copy proposal, addendum, amendments, plans, standard specifications, supplemental specifications and special provisions are part of the bid and contract. Further, I acknowledge that I have read, understand, accept, acknowledge and agree to comply with all statements in this electronic bid.

Signature Agency Date

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| Contract Item Sheets For C203955 | | | | | | | |
|----------------------------------|---|---|--------------|---|------------------------------|--|--|
| Unit Bid Price | Quantity Unit | Description | Sec # | ItemNumber | Line # | | |
| | | ROADWAY ITEMS | | | | | |
| 1,213,000.00 | Lump Sum LS | MOBILIZATION | 800 | 0000100000-N | 0001 | | |
| 325,000.00 | Lump Sum LS | CONSTRUCTION SURVEYING | 801 | 0000400000-N | 0002 | | |
| 54,500.00 | Lump Sum LS | FIELD OFFICE | SP | 0000700000-N | 0003 | | |
| 22,800.00 | Lump Sum LS | REINFORCED BRIDGE APPROACH FILL, STATION ************************************ | SP | 0029000000-N | 0004 | | |
| 10.00 | 22,600 CY | UNDERCUT EXCAVATION | 225 | 0036000000-E | 0005 | | |
| 5,740,000.00 | Lump Sum LS | GRADING | 226 | 0043000000-N | 0006 | | |
| 9,000.00 | 2 ACR | SUPPLEMENTARY CLEARING & GRUB- BING | 226 | 0050000000-E | 0007 | | |
| 17.99 | 2,900 CY | DRAINAGE DITCH EXCAVATION | 240 | 0134000000-E | 0008 | | |
| 235.00 | 15 HR | PROOF ROLLING | 260 | 0192000000-N | 0009 | | |
| 14.00 | 37,300 CY | SELECT GRANULAR MATERIAL | 265 | 0195000000-E | 0010 | | |
| 2.25 | 70,000 SY | GEOTEXTILE FOR SOIL STABILIZA- TION | 270 | 0196000000-E | 0011 | | |
| 37.50 | 780 SF | TEMPORARY SHORING | SP | 0199000000-E | 0012 | | |
| 46.00 | 1,732 TON | FOUNDATION CONDITIONING MATE- RIAL, MINOR STRUCTURES | 300 | 0318000000-E | 0013 | | |
| 3.95 | 8,298 SY | FOUNDATION CONDITIONING GEO- TEXTILE | 300 | 0320000000-E | 0014 | | |
| 68.00 | 244 LF | **" SIDE DRAIN PIPE (30") | 310 | 0342000000-E | 0015 | | |
| 38.00 | 132 LF | 15" SIDE DRAIN PIPE | 310 | 0343000000-E | 0016 | | |
| 43.00 | 148 LF | 18" SIDE DRAIN PIPE | 310 | 0344000000-E | 0017 | | |
| 58.00 | 244 LF | 24" SIDE DRAIN PIPE | 310 | 0345000000-E | 0018 | | |
| 41.00 | 1,192 LF | 15" RC PIPE CULVERTS, CLASS III | 310 | 0366000000-E | 0019 | | |
| | 1,213,000.00 325,000.00 54,500.00 10.00 10.00 5,740,000.00 17.99 235.00 14.00 2.25 37.50 46.00 38.00 43.00 | Unit Price Lump Sum LS 1,213,000.00 Lump Sum LS 325,000.00 Lump Sum LS 54,500.00 Lump Sum LS 22,800.00 Lump Sum LS 5,740,000.00 Lump Sum LS 5,740,000.00 LS 2 9,000.00 ACR 17.99 CY 15 235.00 HR 37,300 14.00 14.00 CY 70,000 SF 37.50 SF 1,732 46.00 TON 46.00 LF 132 38.00 LF 148 43.00 LF 244 58.00 LF 1,192 41.00 | MOBILIZATION | # Unit Price ROADWAY ITEMS 800 MOBILIZATION | ROADWAY ITEMS 1.213.000.00 | | |

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| | Contract Item Sheets For C203955 | | | | | | | |
|-----------|----------------------------------|----------|---|------------------|-------------------|---------------|--|--|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid | | |
| 0020 | 0372000000-E | 310 | 18" RC PIPE CULVERTS, CLASS | 644 LF | 53.50 | 34,454.00 | | |
| 0021 | 0378000000-E | 310 | 24" RC PIPE CULVERTS, CLASS III | 140 LF | 59.50 | 8,330.00 | | |
| 0022 | 0384000000-E | 310 | 30" RC PIPE CULVERTS, CLASS | 428 LF | 70.00 | 29,960.00 | | |
| 0023 | 0408000000-E | 310 | 54" RC PIPE CULVERTS, CLASS | 136 LF | 209.00 | 28,424.00 | | |
| 0024 | 0420000000-E | 310 | 66" RC PIPE CULVERTS, CLASS | 320 LF | 386.00 | 123,520.00 | | |
| 0025 | 0448200000-E | 310 | 15" RC PIPE CULVERTS, CLASS IV | 1,724 LF | 51.00 | 87,924.00 | | |
| 0026 | 0448300000-E | 310 | 18" RC PIPE CULVERTS, CLASS IV | 1,128 LF | 55.50 | 62,604.00 | | |
| 0027 | 0448400000-E | 310 | 24" RC PIPE CULVERTS, CLASS IV | 100 LF | 83.75 | 8,375.00 | | |
| 0028 | 0448500000-E | 310 | 30" RC PIPE CULVERTS, CLASS IV | 96 LF | 102.75 | 9,864.00 | | |
| 0029 | 0546000000-E | 310 | **" CAA PIPE CULVERTS, *****" THICK (15", 0.064") | 412 LF | 40.00 | 16,480.00 | | |
| 0030 | 0546000000-E | 310 | **" CAA PIPE CULVERTS, *****" THICK (18", 0.064") | 160 LF | 45.50 | 7,280.00 | | |
| 0031 | 0564000000-E | 310 | **" CAA PIPE ELBOWS, *****" THICK (15", 0.064") | 10 EA | 475.00 | 4,750.00 | | |
| 0032 | 0564000000-E | 310 | **" CAA PIPE ELBOWS, *****" THICK (18", 0.064") | 2 EA | 515.00 | 1,030.00 | | |
| 0033 | 0973100000-E | 330 | **" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (18", 0.5") | 80 LF | 244.00 | 19,520.00 | | |
| 0034 | 0973100000-E | 330 | **" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (30", 0.5") | 380 LF | 320.00 | 121,600.00 | | |
| 0035 | 0995000000-E | 340 | PIPE REMOVAL | 2,803 LF | 19.50 | 54,658.50 | | |

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| | Contract Item Sheets For C203955 | | | | | | | |
|-----------|----------------------------------|----------|--|------------------|-------------------|---------------|--|--|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid | | |
| 0036 | 1077000000-E | SP | #57 STONE | 5 TON | 96.00 | 480.00 | | |
| 0037 | 1099500000-E | 505 | SHALLOW UNDERCUT | 10,520 CY | 12.50 | 131,500.00 | | |
| 0038 | 1099700000-E | 505 | CLASS IV SUBGRADE STABILIZA- TION | 20,300 TON | 36.50 | 740,950.00 | | |
| 0039 | 1111000000-E | SP | CLASS IV AGGREGATE STABILIZA- TION | 6,750 TON | 48.00 | 324,000.00 | | |
| 0040 | 1121000000-E | 520 | AGGREGATE BASE COURSE | 3,354 TON | 51.50 | 172,731.00 | | |
| 0041 | 1220000000-E | 545 | INCIDENTAL STONE BASE | 200 TON | 39.25 | 7,850.00 | | |
| 0042 | 1275000000-E | 600 | PRIME COAT | 1,048.6 GAL | 5.75 | 6,029.45 | | |
| 0043 | 1489000000-E | 610 | ASPHALT CONC BASE COURSE, TYPE B25.0B | 5,090 TON | 68.85 | 350,446.50 | | |
| 0044 | 1491000000-E | 610 | ASPHALT CONC BASE COURSE, TYPE B25.0C | 11,620 TON | 69.75 | 810,495.00 | | |
| 0045 | 1498000000-E | 610 | ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B | 1,380 TON | 68.35 | 94,323.00 | | |
| 0046 | 1503000000-E | 610 | ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C | 10,740 TON | 68.40 | 734,616.00 | | |
| 0047 | 1519000000-E | 610 | ASPHALT CONC SURFACE COURSE, TYPE S9.5B | 5,320 TON | 66.75 | 355,110.00 | | |
| 0048 | 1523000000-E | 610 | ASPHALT CONC SURFACE COURSE, TYPE S9.5C | 11,490 TON | 65.75 | 755,467.50 | | |
| 0049 | 1575000000-E | 620 | ASPHALT BINDER FOR PLANT MIX | 2,315 TON | 320.00 | 740,800.00 | | |
| 0050 | 1693000000-E | 654 | ASPHALT PLANT MIX, PAVEMENT REPAIR | 200 TON | 250.00 | 50,000.00 | | |
| 0051 | 2022000000-E | 815 | SUBDRAIN EXCAVATION | 168 CY | 25.00 | 4,200.00 | | |
| 0052 | 2026000000-E | 815 | GEOTEXTILE FOR SUBSURFACE DRAINS | 500 SY | 9.00 | 4,500.00 | | |
| 0053 | 2036000000-E | 815 | SUBDRAIN COARSE AGGREGATE | 84 CY | 60.00 | 5,040.00 | | |
| | | | | | | | | |

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| Contract Item Sheets For C203955 | | | | | | |
|----------------------------------|--------------|----------|--|------------------|-------------------|---------------|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid |
| | | | | | | |
| 0054 | 2044000000-E | 815 | 6" PERFORATED SUBDRAIN PIPE | 500 LF | 14.00 | 7,000.00 |
| 0055 | 2070000000-N | 815 | SUBDRAIN PIPE OUTLET | 1 EA | 350.00 | 350.00 |
| 0056 | 2077000000-E | 815 | 6" OUTLET PIPE | 6 LF | 30.00 | 180.00 |
| 0057 | 2220000000-E | 838 | REINFORCED ENDWALLS | 13.7 CY | 2,500.00 | 34,250.00 |
| 0058 | 2253000000-E | 840 | PIPE COLLARS | 1.34 CY | 3,050.00 | 4,087.00 |
| 0059 | 2264000000-E | 840 | PIPE PLUGS | 0.35 CY | 2,665.00 | 932.75 |
| 0060 | 2275000000-E | SP | FLOWABLE FILL | 11 CY | 495.00 | 5,445.00 |
| 0061 | 2286000000-N | 840 | MASONRY DRAINAGE STRUCTURES | 67 EA | 1,800.00 | 120,600.00 |
| 0062 | 2297000000-E | 840 | MASONRY DRAINAGE STRUCTURES | 30.8 CY | 1,525.00 | 46,970.00 |
| 0063 | 2308000000-E | 840 | MASONRY DRAINAGE STRUCTURES | 7.8 | 300.00 | 2,340.00 |
| 0064 | 2364000000-N | 840 | FRAME WITH TWO GRATES, STD 840.16 | 27 EA | 560.00 | 15,120.00 |
| 0065 | 2364200000-N | 840 | FRAME WITH TWO GRATES, STD 840.20 | 7 EA | 570.00 | 3,990.00 |
| 0066 | 2365000000-N | 840 | FRAME WITH TWO GRATES, STD 840.22 | 21 EA | 570.00 | 11,970.00 |
| 0067 | 2366000000-N | 840 | FRAME WITH TWO GRATES, STD 840.24 | 5 EA | 580.00 | 2,900.00 |
| 0068 | 2367000000-N | 840 | FRAME WITH TWO GRATES, STD 840.29 | 3 EA | 570.00 | 1,710.00 |
| 0069 | 2374000000-N | 840 | FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G) | 3 EA | 620.00 | 1,860.00 |
| 0070 | 2396000000-N | 840 | FRAME WITH COVER, STD 840.54 | 1 EA | 450.00 | 450.00 |
| 0071 | 2407000000-N | 840 | STEEL FRAME WITH TWO GRATES, STD 840.37 | 1 EA | 1,500.00 | 1,500.00 |
| 0072 | 2451000000-N | 852 | CONCRETE TRANSITIONAL SECTION FOR DROP INLET | 23 EA | 1,300.00 | 29,900.00 |

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| | | | Contract Item Sheets For C2 | 03955 | | |
|-----------|--------------|----------|--|------------------|-------------------|---------------|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid |
| 0073 | 2549000000-E | 846 | 2'-6" CONCRETE CURB & GUTTER | 280 LF | 31.00 | 8,680.00 |
| 0074 | 2556000000-E | 846 | SHOULDER BERM GUTTER | 910 LF | 28.00 | 25,480.00 |
| 0075 | 2619000000-E | 850 | 4" CONCRETE PAVED DITCH | 110 SY | 52.00 | 5,720.00 |
| 0076 | 2655000000-E | 852 | 5" MONOLITHIC CONCRETE ISLANDS (KEYED IN) | 1,610 SY | 55.00 | 88,550.00 |
| 0077 | 2724000000-E | 857 | PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED | 40 LF | 115.00 | 4,600.00 |
| 0078 | 2815000000-N | 858 | ADJUSTMENT OF DROP INLETS | 1 EA | 1,385.00 | 1,385.00 |
| 0079 | 2938000000-N | 859 | CONVERT EXISTING DROP INLET TO JUNCTION BOX WITH MANHOLE | 1 EA | 1,385.00 | 1,385.00 |
| 0080 | 3000000000-N | SP | IMPACT ATTENUATOR UNIT, TYPE 350 | 4 EA | 14,950.00 | 59,800.00 |
| 0081 | 3030000000-E | 862 | STEEL BM GUARDRAIL | 2,375 LF | 16.25 | 38,593.75 |
| 0082 | 3105000000-N | 862 | STEEL BM GUARDRAIL TERMINAL SECTIONS | 2 EA | 125.00 | 250.00 |
| 0083 | 3150000000-N | 862 | ADDITIONAL GUARDRAIL POSTS | 10 EA | 44.00 | 440.00 |
| 0084 | 3210000000-N | 862 | GUARDRAIL ANCHOR UNITS, TYPE CAT-1 | 2 EA | 600.00 | 1,200.00 |
| 0085 | 3270000000-N | SP | GUARDRAIL ANCHOR UNITS, TYPE 350 | 3 EA | 1,850.00 | 5,550.00 |
| 0086 | 3317000000-N | 862 | GUARDRAIL ANCHOR UNITS, TYPE B-77 | 7 EA | 1,700.00 | 11,900.00 |
| 0087 | 3360000000-E | 863 | REMOVE EXISTING GUARDRAIL | 440 LF | 2.00 | 880.00 |
| 0088 | 3503000000-E | 866 | WOVEN WIRE FENCE, 47" FABRIC | 6,360 LF | 3.25 | 20,670.00 |
| 0089 | 3506000000-E | 866 | 4" TIMBER FENCE POSTS, ***** LONG (8') | 386 EA | 16.00 | 6,176.00 |
| 0090 | 3515000000-E | 866 | 5" TIMBER FENCE POSTS, 8'-0" LONG | 127 EA | 38.00 | 4,826.00 |

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| | | | Contract Item Sheets For C2 | 03955 | | _ |
|-----------|--------------|----------|---|------------------|-------------------|---------------|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid |
| 0091 | 3533000000-E | 866 | CHAIN LINK FENCE, **" FABRIC (84") | 5,310 LF | 16.00 | 84,960.00 |
| 0092 | 3539000000-E | 866 | METAL LINE POSTS FOR **" CHAIN LINK FENCE (84") | 447 EA | 95.00 | 42,465.00 |
| 0093 | 3545000000-E | 866 | METAL TERMINAL POSTS FOR **" CHAIN LINK FENCE (84") | 37 EA | 160.00 | 5,920.00 |
| 0094 | 3578000000-N | SP | GENERIC FENCING ITEM 24' STEEL PIPE GATE | 1 EA | 6,500.00 | 6,500.00 |
| 0095 | 3628000000-E | 876 | RIP RAP, CLASS I | 730 TON | 80.00 | 58,400.00 |
| 0096 | 3649000000-E | 876 | RIP RAP, CLASS B | 380 TON | 82.50 | 31,350.00 |
| 0097 | 3656000000-E | 876 | GEOTEXTILE FOR DRAINAGE | 3,915 SY | 4.50 | 17,617.50 |
| 0098 | 4048000000-E | 902 | REINFORCED CONCRETE SIGN FOUN- DATIONS | 4 CY | 1,275.00 | 5,100.00 |
| 0099 | 4054000000-E | 902 | PLAIN CONCRETE SIGN FOUNDA- TIONS | 1 CY | 975.00 | 975.00 |
| 0100 | 4057000000-E | SP | OVERHEAD FOOTING | 37 CY | 975.00 | 36,075.00 |
| 0101 | 4060000000-E | 903 | SUPPORTS, BREAKAWAY STEEL BEAM | 4,814 LB | 3.50 | 16,849.00 |
| 0102 | 4072000000-E | 903 | SUPPORTS, 3-LB STEEL U-CHANNEL | 220 LF | 10.25 | 2,255.00 |
| 0103 | 4082000000-E | 903 | SUPPORTS, WOOD | 1,905 LF | 13.00 | 24,765.00 |
| 0104 | 4082100000-N | SP | SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ****** (21+00 -YWB01-) | Lump Sum LS | 46,110.00 | 46,110.00 |
| 0105 | 4082100000-N | SP | SUPPORTS, OVERHEAD SIGN STRUC- TURE AT STA ****** (96+78 -L-) | Lump Sum LS | 47,235.00 | 47,235.00 |
| 0106 | 4096000000-N | 904 | SIGN ERECTION, TYPE D | 5 EA | 155.00 | 775.00 |
| 0107 | 4102000000-N | 904 | SIGN ERECTION, TYPE E | 78 EA | 82.00 | 6,396.00 |
| 0108 | 4108000000-N | 904 | SIGN ERECTION, TYPE F | 11 EA | 90.00 | 990.00 |

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| | Contract Item Sheets For C203955 | | | | | | |
|-----------|----------------------------------|----------|---|------------------|-------------------|---------------|--|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid | |
| | | | | | | | |
| 0109 | 4110000000-N | 904 | SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A) | 9 EA | 625.00 | 5,625.00 | |
| 0110 | 4116100000-N | 904 | SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (D) | 4 EA | 155.00 | 620.00 | |
| 0111 | 4141000000-N | 907 | DISPOSAL OF SUPPORT, WOOD | 4 EA | 1.00 | 4.00 | |
| 0112 | 4158000000-N | 907 | | 49 EA | 1.00 | 49.00 | |
| 0113 | 4370000000-N | SP | GENERIC SIGNING ITEM DISPOSAL OF FLASHER SYSTEM | Lump Sum LS | 1,000.00 | 1,000.00 | |
| 0114 | 440000000-E | 1110 | WORK ZONE SIGNS (STATIONARY) | 256 SF | 10.00 | 2,560.00 | |
| 0115 | 4405000000-E | 1110 | WORK ZONE SIGNS (PORTABLE) | 580 SF | 57.00 | 33,060.00 | |
| 0116 | 4410000000-E | 1110 | WORK ZONE SIGNS (BARRICADE MOUNTED) | 214 SF | 7.50 | 1,605.00 | |
| 0117 | 4415000000-N | 1115 | FLASHING ARROW BOARD | 2 EA | 4,200.00 | 8,400.00 | |
| 0118 | 4420000000-N | 1120 | PORTABLE CHANGEABLE MESSAGE SIGN | 2 EA | 14,600.00 | 29,200.00 | |
| 0119 | 4430000000-N | 1130 | DRUMS | 500 EA | 69.00 | 34,500.00 | |
| 0120 | 4435000000-N | 1135 | CONES | 100 EA | 20.00 | 2,000.00 | |
| 0121 | 4445000000-E | 1145 | BARRICADES (TYPE III) | 232 LF | 20.00 | 4,640.00 | |
| 0122 | 4455000000-N | 1150 | FLAGGER | 360 DAY | 240.00 | 86,400.00 | |
| 0123 | 4465000000-N | 1160 | TEMPORARY CRASH CUSHIONS | 5 EA | 7,500.00 | 37,500.00 | |
| 0124 | 448000000-N | 1165 | TMA | 2 EA | 26,000.00 | 52,000.00 | |
| 0125 | 4490000000-E | 1170 | PORTABLE CONCRETE BARRIER (ANCHORED) | 721 LF | 44.95 | 32,408.95 | |
| 0126 | 4510000000-N | SP | LAW ENFORCEMENT | 240 HR | 50.00 | 12,000.00 | |
| 0127 | 4516000000-N | 1180 | SKINNY DRUM | 200 EA | 51.00 | 10,200.00 | |
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| | | | Contract Item Sheets For C20 | 3955 | | |
|-----------|--------------|----------|---|------------------|-------------------|---------------|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid |
| 0128 | 4650000000-N | 1251 | TEMPORARY RAISED PAVEMENT MARKERS | 268 EA | 6.00 | 1,608.00 |
| 0129 | 4685000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS) | 22,017 LF | 0.80 | 17,613.60 |
| 0130 | 4686000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS) | 9,685 LF | 0.90 | 8,716.50 |
| 0131 | 4688000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS) | 24,947 LF | 1.05 | 26,194.35 |
| 0132 | 4690000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (6", 120 MILS) | 6,069 LF | 1.35 | 8,193.15 |
| 0133 | 4695000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS) | 2,838 LF | 3.00 | 8,514.00 |
| 0134 | 4697000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS) | 899 LF | 3.00 | 2,697.00 |
| 0135 | 4700000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS) | 2,035 LF | 2.00 | 4,070.00 |
| 0136 | 4702000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (12", 120 MILS) | 1,090 LF | 2.50 | 2,725.00 |
| 0137 | 4705000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (16", 120 MILS) | 95 LF | 6.00 | 570.00 |
| 0138 | 4710000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS) | 580 LF | 7.00 | 4,060.00 |
| 0139 | 4721000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS) | 24 EA | 120.00 | 2,880.00 |
| 0140 | 4725000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS) | 98 EA | 130.00 | 12,740.00 |
| 0141 | 4810000000-E | 1205 | PAINT PAVEMENT MARKING LINES (4") | 16,133 LF | 0.25 | 4,033.25 |
| 0142 | 4820000000-E | 1205 | PAINT PAVEMENT MARKING LINES (8") | 222 LF | 1.00 | 222.00 |
| 0143 | 4835000000-E | 1205 | PAINT PAVEMENT MARKING LINES (24") | 137 LF | 3.00 | 411.00 |
| 0144 | 4845000000-N | 1205 | PAINT PAVEMENT MARKING SYMBOL | 13 EA | 65.00 | 845.00 |
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| | Contract Item Sheets For C203955 | | | | | | |
|-----------|----------------------------------|----------|--|------------------|-------------------|---------------|--|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid | |
| 0145 | 4847000000-E | 1205 | POLYUREA PAVEMENT MARKING LINES (4", *********) (HIGHLY REFLECTIVE ELEMENTS) | 1,116 LF | 5.00 | 5,580.00 | |
| 0146 | 4900000000-N | 1251 | PERMANENT RAISED PAVEMENT MARKERS | 6 EA | 100.00 | 600.00 | |
| 0147 | 4905000000-N | 1253 | SNOWPLOWABLE PAVEMENT MARKERS | 800 EA | 27.00 | 21,600.00 | |
| 0148 | 4935000000-N | 1267 | FLEXIBLE DELINEATORS (CRYSTAL) | 76 EA | 62.00 | 4,712.00 | |
| 0149 | 4940000000-N | 1267 | FLEXIBLE DELINEATORS (YELLOW) | 64 EA | 65.00 | 4,160.00 | |
| 0150 | 5325200000-E | 1510 | 2" WATER LINE | 12 LF | 73.00 | 876.00 | |
| 0151 | 5325600000-E | 1510 | 6" WATER LINE | 85 LF | 55.00 | 4,675.00 | |
| 0152 | 5325800000-E | 1510 | 8" WATER LINE | 4,450 LF | 30.50 | 135,725.00 | |
| 0153 | 5326000000-E | 1510 | 10" WATER LINE | 5,402 LF | 37.00 | 199,874.00 | |
| 0154 | 5326200000-E | 1510 | 12" WATER LINE | 4,224 LF | 38.00 | 160,512.00 | |
| 0155 | 5329000000-E | SP | DUCTILE IRON WATER PIPE FITTINGS | 13,510 LB | 9.00 | 121,590.00 | |
| 0156 | 5536000000-E | 1515 | 2" VALVE | 1 EA | 1,125.00 | 1,125.00 | |
| 0157 | 5540000000-E | 1515 | 6" VALVE | 2 EA | 1,500.00 | 3,000.00 | |
| 0158 | 5546000000-E | 1515 | | 5 EA | 2,100.00 | 10,500.00 | |
| 0159 | 5552000000-E | | 10" VALVE | 4 EA | 2,700.00 | 10,800.00 | |
| 0160 | 5558000000-E | 1515 | 12" VALVE | 1 EA | 3,500.00 | 3,500.00 | |
| 0161 | 5571800000-E | 1515 | 8" TAPPING VALVE | 1 EA | 4,600.00 | 4,600.00 | |
| 0162 | 5589200000-E | 1515 | 2" AIR RELEASE VALVE | 2 EA | 4,700.00 | 9,400.00 | |
| 0163 | 5648000000-N | 1515 | RELOCATE WATER METER | 4 EA | 1,200.00 | 4,800.00 | |
| 0164 | 5649000000-N | 1515 | RECONNECT WATER METER | 2 EA | 1,400.00 | 2,800.00 | |

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| | | | Contract Item Sheets For 0 | C203955 | | |
|-----------|--------------|----------|---------------------------------------|------------------|-------------------|---------------|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid |
| | | | | | | |
| 0165 | 5672000000-N | 1515 | RELOCATE FIRE HYDRANT | 4 EA | 3,800.00 | 15,200.00 |
| 0166 | 5709100000-E | 1520 | 2" FORCE MAIN SEWER | 476 LF | 20.00 | 9,520.00 |
| 0167 | 5709300000-E | 1520 | 6" FORCE MAIN SEWER | 60 LF | 86.00 | 5,160.00 |
| 0168 | 5709400000-E | 1520 | 8" FORCE MAIN SEWER | 2,957 LF | 54.00 | 159,678.00 |
| 0169 | 5769000000-E | SP | DUCTILE IRON SEWER PIPE FITTINGS | 4,030 LB | 9.00 | 36,270.00 |
| 0170 | 5775000000-E | 1525 | 4' DIA UTILITY MANHOLE | 2 EA | 1,800.00 | 3,600.00 |
| 0171 | 5781000000-E | 1525 | UTILITY MANHOLE WALL, 4' DIA | 2 LF | 365.00 | 730.00 |
| 0172 | 5798000000-E | 1530 | ABANDON **" UTILITY PIPE (2") | 530 LF | 0.01 | 5.30 |
| 0173 | 5800000000-E | 1530 | ABANDON 6" UTILITY PIPE | 165 LF | 0.01 | 1.65 |
| 0174 | 5801000000-E | 1530 | ABANDON 8" UTILITY PIPE | 7,435 LF | 0.01 | 74.35 |
| 0175 | 5802000000-E | 1530 | ABANDON 10" UTILITY PIPE | 5,353 LF | 0.01 | 53.53 |
| 0176 | 5804000000-E | 1530 | ABANDON 12" UTILITY PIPE | 4,092 LF | 0.01 | 40.92 |
| 0177 | 5816000000-N | 1530 | ABANDON UTILITY MANHOLE | 1 EA | 1,100.00 | 1,100.00 |
| 0178 | 5828000000-N | | REMOVE UTILITY MANHOLE | 1 EA | 1,100.00 | 1,100.00 |
| 0180 | 6000000000-E | | TEMPORARY SILT FENCE | 27,500 LF | 2.40 | 66,000.00 |
| 0181 | 6006000000-E | 1610 | STONE FOR EROSION CONTROL, CLASS A | 2,680 TON | 8.25 | 22,110.00 |
| 0182 | 6009000000-E | 1610 | STONE FOR EROSION CONTROL, CLASS B | 5,375 TON | 8.25 | 44,343.75 |
| 0183 | 6012000000-E | 1610 | SEDIMENT CONTROL STONE | 4,255 TON | 5.80 | 24,679.00 |
| 0184 | 6015000000-E | 1615 | TEMPORARY MULCHING | 179.5 ACR | 675.00 | 121,162.50 |
| 0185 | 6018000000-E | 1620 | SEED FOR TEMPORARY SEEDING | 7,800 LB | 3.00 | 23,400.00 |
| | | | | | | |

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| | Contract Item Sheets For C203955 | | | | | | | |
|-----------|----------------------------------|----------|-----------------------------------|------------------|-------------------|---------------|--|--|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid | | |
| 0186 | 6021000000-E | 1620 | FERTILIZER FOR TEMPORARY SEED-ING | 39 TON | 1,100.00 | 42,900.00 | | |
| 0187 | 6024000000-E | 1622 | TEMPORARY SLOPE DRAINS | 5,000 LF | 2.50 | 12,500.00 | | |
| 0188 | 6029000000-E | SP | SAFETY FENCE | 2,000 LF | 2.50 | 5,000.00 | | |
| 0189 | 6030000000-E | 1630 | SILT EXCAVATION | 15,200 CY | 1.45 | 22,040.00 | | |
| 0190 | 6036000000-E | 1631 | MATTING FOR EROSION CONTROL | 22,500 SY | 2.00 | 45,000.00 | | |
| 0191 | 6037000000-E | SP | COIR FIBER MAT | 1,100 SY | 5.00 | 5,500.00 | | |
| 0192 | 6042000000-E | 1632 | 1/4" HARDWARE CLOTH | 800 LF | 3.00 | 2,400.00 | | |
| 0193 | 6043000000-E | SP | LOW PERMEABILITY GEOTEXTILE | 500 SY | 4.00 | 2,000.00 | | |
| 0194 | 6045000000-E | SP | **" TEMPORARY PIPE (24") | 110 LF | 25.00 | 2,750.00 | | |
| 0195 | 6069000000-E | 1638 | STILLING BASINS | 686 CY | 28.00 | 19,208.00 | | |
| 0196 | 6071010000-E | SP | WATTLE | 8,400 LF | 3.40 | 28,560.00 | | |
| 0197 | 6071013000-E | SP | WATTLE BARRIER | 1,900 LF | 6.00 | 11,400.00 | | |
| 0198 | 6071020000-E | SP | POLYACRYLAMIDE (PAM) | 5,620 LB | 15.00 | 84,300.00 | | |
| 0199 | 6071030000-E | 1640 | COIR FIBER BAFFLE | 5,500 LF | 5.00 | 27,500.00 | | |
| 0200 | 6071050000-E | SP | **" SKIMMER (1-1/2") | 11 EA | 2,600.00 | 28,600.00 | | |
| 0201 | 6071050000-E | SP | **" SKIMMER (2") | 4 EA | 3,700.00 | 14,800.00 | | |
| 0202 | 6084000000-E | 1660 | SEEDING & MULCHING | 126 ACR | 1,850.00 | 233,100.00 | | |
| 0203 | 6087000000-E | 1660 | MOWING | 67 ACR | 95.00 | 6,365.00 | | |
| 0204 | 6090000000-E | 1661 | SEED FOR REPAIR SEEDING | 1,850 LB | 5.75 | 10,637.50 | | |
| 0205 | 6093000000-E | 1661 | FERTILIZER FOR REPAIR SEEDING | 5.5 TON | 1,150.00 | 6,325.00 | | |

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| | | | Contract Item Sheets For C2 | 03955 | | |
|-----------|--------------|----------|---|------------------|-------------------|---------------|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid |
| 0206 | 6096000000-E | 1662 | SEED FOR SUPPLEMENTAL SEEDING | 2,950 LB | 3.50 | 10,325.00 |
| 0207 | 6108000000-E | 1665 | FERTILIZER TOPDRESSING | 88 TON | 750.00 | 66,000.00 |
| 0208 | 6111000000-E | SP | IMPERVIOUS DIKE | 382 LF | 65.50 | 25,021.00 |
| 0209 | 6114500000-N | 1667 | SPECIALIZED HAND MOWING | 10 MHR | 55.00 | 550.00 |
| 0210 | 6117000000-N | SP | RESPONSE FOR EROSION CONTROL | 125 EA | 225.00 | 28,125.00 |
| 0211 | 6120000000-E | SP | CULVERT DIVERSION CHANNEL | 160 CY | 15.00 | 2,400.00 |
| 0212 | 6123000000-E | 1670 | REFORESTATION | 0.1 ACR | 10,000.00 | 1,000.00 |
| 0213 | 6132000000-N | SP | GENERIC EROSION CONTROL ITEM CONCRETE WASHOUT STRUCTURE | 10 EA | 2,100.00 | 21,000.00 |
| 0214 | 7060000000-E | 1705 | SIGNAL CABLE | 9,560 LF | 2.25 | 21,510.00 |
| 0215 | 7108000000-E | 1705 | VEHICLE SIGNAL HEAD (12", 1 SECTION) | 8 EA | 725.00 | 5,800.00 |
| 0216 | 7120000000-E | 1705 | VEHICLE SIGNAL HEAD (12", 3 SECTION) | 37 EA | 685.00 | 25,345.00 |
| 0217 | 7132000000-E | 1705 | VEHICLE SIGNAL HEAD (12", 4 SECTION) | 4 EA | 875.00 | 3,500.00 |
| 0218 | 7144000000-E | 1705 | VEHICLE SIGNAL HEAD (12", 5 SECTION) | 1 EA | 1,150.00 | 1,150.00 |
| 0219 | 7264000000-E | 1710 | MESSENGER CABLE (3/8") | 2,200 LF | 3.00 | 6,600.00 |
| 0220 | 7279000000-E | 1715 | TRACER WIRE | 3,797 LF | 0.50 | 1,898.50 |
| 0221 | 7300000000-E | 1715 | UNPAVED TRENCHING (********) (1, 2") | 6,352 LF | 4.05 | 25,725.60 |
| 0222 | 7300000000-E | 1715 | UNPAVED TRENCHING (********) (2, 2") | 860 LF | 4.50 | 3,870.00 |
| 0223 | 7300000000-E | 1715 | UNPAVED TRENCHING (********) (3, 2") | 250 LF | 5.00 | 1,250.00 |
| 0224 | 7300100000-E | 1715 | UNPAVED TRENCHING FOR TEMP- ORARY LEAD-IN | 850 LF | 5.00 | 4,250.00 |

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| | | | Contract Item Sheets For C2 | 03955 | | |
|-----------|--------------|----------|--|------------------|-------------------|---------------|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid |
| 0225 | 7301000000-E | 1715 | DIRECTIONAL DRILL (********) (1, 2") | 1,924 LF | 16.00 | 30,784.00 |
| 0226 | 7324000000-N | 1716 | JUNCTION BOX (STANDARD SIZE) | 27 EA | 250.00 | 6,750.00 |
| 0227 | 7348000000-N | 1716 | JUNCTION BOX (OVER-SIZED, HEA- VY DUTY) | 11 EA | 450.00 | 4,950.00 |
| 0228 | 7360000000-N | 1720 | WOOD POLE | 7 EA | 900.00 | 6,300.00 |
| 0229 | 7372000000-N | 1721 | GUY ASSEMBLY | 14 EA | 275.00 | 3,850.00 |
| 0230 | 7408000000-E | 1722 | 1" RISER WITH WEATHERHEAD | 2 EA | 350.00 | 700.00 |
| 0231 | 7420000000-E | 1722 | 2" RISER WITH WEATHERHEAD | 6 EA | 330.00 | 1,980.00 |
| 0232 | 7444000000-E | 1725 | INDUCTIVE LOOP SAWCUT | 2,800 LF | 5.75 | 16,100.00 |
| 0233 | 7456000000-E | 1726 | LEAD-IN CABLE (*************) (14-2) | 13,070 LF | 1.20 | 15,684.00 |
| 0234 | 7481000000-N | SP | SITE SURVEY | 1 EA | 1,500.00 | 1,500.00 |
| 0235 | 7481200000-N | SP | LUMINAIRE ARM FOR VIDEO SYSTEM | 4 EA | 750.00 | 3,000.00 |
| 0236 | 7481240000-N | SP | CAMERA WITHOUT INTERNAL LOOP EMULATOR PROCESSING UNIT | 4 EA | 2,192.00 | 8,768.00 |
| 0237 | 7481260000-N | SP | EXTERNAL LOOP EMULATOR PRO- CESSING UNIT | 1 EA | 5,300.00 | 5,300.00 |
| 0238 | 7481280000-N | SP | RELOCATE CAMERA SENSOR UNIT | 4 EA | 185.00 | 740.00 |
| 0239 | 7516000000-E | 1730 | COMMUNICATIONS CABLE (**FIBER) (12) | 4,743 LF | 1.75 | 8,300.25 |
| 0240 | 7528000000-E | 1730 | DROP CABLE | 3 LF | 10.00 | 30.00 |
| 0241 | 7540000000-N | 1731 | SPLICE ENCLOSURE | 4 EA | 1,150.00 | 4,600.00 |
| 0242 | 7541000000-N | 1731 | MODIFY SPLICE ENCLOSURE | 1 EA | 2,500.00 | 2,500.00 |
| 0243 | 7552000000-N | 1731 | INTERCONNECT CENTER | 3 EA | 1,050.00 | 3,150.00 |
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| | | | Contract Item Sheets For C2 | | 77 4: 70.7 | |
|-----------|--------------|----------|---|------------------|-------------------|---------------|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid |
| | | | | | | |
| 0244 | 7564100000-N | 1732 | FIBER-OPTIC TRANSCEIVER, SELF- HEALING RING | 3 EA | 585.00 | 1,755.00 |
| 0245 | 7566000000-N | 1733 | DELINEATOR MARKER | 9 EA | 75.00 | 675.00 |
| 0246 | 7575142060-N | SP | MODIFY RADIO INSTALLATION | 2 EA | 1,500.00 | 3,000.00 |
| 0247 | 7576000000-N | SP | METAL STRAIN SIGNAL POLE | 7 EA | 7,800.00 | 54,600.00 |
| 0248 | 7613000000-N | SP | SOIL TEST | 7 EA | 785.00 | 5,495.00 |
| 0249 | 7614100000-E | SP | DRILLED PIER FOUNDATION | 64 CY | 850.00 | 54,400.00 |
| 0250 | 7636000000-N | 1745 | SIGN FOR SIGNALS | 8 EA | 270.00 | 2,160.00 |
| 0251 | 7642200000-N | 1743 | TYPE II PEDESTAL WITH FOUND- ATION | 7 EA | 475.00 | 3,325.00 |
| 0252 | 7642300000-N | 1743 | TYPE III PEDESTAL WITH FOUND- ATION | 4 EA | 675.00 | 2,700.00 |
| 0253 | 7684000000-N | 1750 | SIGNAL CABINET FOUNDATION | 3 EA | 900.00 | 2,700.00 |
| 0254 | 7756000000-N | 1751 | CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED) | 3 EA | 12,500.00 | 37,500.00 |
| 0255 | 7768000000-N | 1751 | CONTROLLER WITH CABINET (TYPE 2070L, POLE MOUNTED) | 1 EA | 11,500.00 | 11,500.00 |
| 0256 | 7780000000-N | 1751 | DETECTOR CARD (TYPE 2070L) | 26 EA | 120.00 | 3,120.00 |
| 0257 | 7901000000-N | | CABINET BASE EXTENDER | 3 EA | 1,200.00 | 3,600.00 |
| 0258 | 7960000000-N | SP | | 7 EA | 760.00 | 5,320.00 |
| 0259 | 7972000000-N | SP | METAL POLE REMOVAL | 7 EA | 510.00 | 3,570.00 |
| 0260 | 798000000-N | SP | GENERIC SIGNAL ITEM RELOCATE EMERGENCY VEHICLE PHASE SELECTOR | 1 EA | 3,500.00 | 3,500.00 |
| 0261 | 7980000000-N | SP | GENERIC SIGNAL ITEM RELOCATE EMERGENCY VEHICLE DETECTOR | 2 EA | 3,500.00 | 7,000.00 |

Jul 06, 2017 2:01 pm

North Carolina Department Of Transportation Contract Item Sheets For C203955

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| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid | | | |
|-----------|--------------|----------|--|------------------|-------------------|---------------|--|--|--|
| 0262 | 7990000000-E | SP | GENERIC SIGNAL ITEM EMERGENCY VEHICLE DETECTOR CABLE | 750 LF | 5.00 | 3,750.00 | | | |

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North Carolina Department Of Transportation Contract Item Sheets For C203955

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| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid |
|-----------|--------------|----------|--|------------------|-------------------|---------------|
| | | | | | | |
| 0263 | 8126000000-N | 414 | CULVERT EXCAVATION, STA ****** (26+94.23 -Y09A-) | Lump Sum LS | 36,500.00 | 36,500.00 |
| 0264 | 8126000000-N | 414 | CULVERT EXCAVATION, STA ***** (78+05.84 -L-) | Lump Sum LS | 43,300.00 | 43,300.00 |
| 0265 | 8133000000-E | 414 | FOUNDATION CONDITIONING MATER- IAL, BOX CULVERT | 119.6 TON | 50.00 | 5,980.00 |
| 0266 | 8196000000-E | 420 | CLASS A CONCRETE (CULVERT) | 180 CY | 1,295.00 | 233,100.00 |
| 0267 | 8245000000-E | 425 | REINFORCING STEEL (CULVERT) | 41,114 LB | 1.20 | 49,336.80 |

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North Carolina Department Of Transportation Contract Item Sheets For C203955

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| | | | Contract Item Sheets For | C203955 | | |
|-----------|--------------|----------|--------------------------------|------------------|-------------------|---------------|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid |
| 0268 | 8801000000-E | SP | MSE RETAINING WALL NO **** (1) | 17,700 SF | 79.00 | 1,398,300.00 |
| 0269 | 8801000000-E | SP | MSE RETAINING WALL NO **** (2) | 9,200 SF | 79.00 | 726,800.00 |

Page: 18 of 19

| | | | Contract Item Sheets For C2 | 03955 | | |
|-----------|--------------|----------|---|------------------|-------------------|---------------|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid |
| 0270 | 8091000000-N | 410 | FOUNDATION EXCAVATION FOR BENT ** AT STATION ****************** (2, 32+25.84 -YEB01-) | Lump Sum LS | 12,300.00 | 12,300.00 |
| 0271 | 8112730000-N | 450 | PDA TESTING | 2 EA | 4,300.00 | 8,600.00 |
| 0272 | 8147000000-E | 420 | REINFORCED CONCRETE DECK SLAB | 19,091 SF | 30.00 | 572,730.00 |
| 0273 | 8161000000-E | 420 | GROOVING BRIDGE FLOORS | 17,126 SF | 0.57 | 9,761.82 |
| 0274 | 8182000000-E | 420 | CLASS A CONCRETE (BRIDGE) | 461.8 CY | 615.00 | 284,007.00 |
| 0275 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ******************(32+25.84 -YEB01-) | Lump Sum LS | 33,200.00 | 33,200.00 |
| 0276 | 8217000000-E | 425 | REINFORCING STEEL (BRIDGE) | 82,025 LB | 0.95 | 77,923.75 |
| 0277 | 8280000000-E | 440 | APPROX LBS STRUCTURAL STEEL | 887,980 LS | 1,750,000.00 | 1,750,000.00 |
| 0278 | 8328200000-E | SP | PILE DRIVING EQUIPMENT SETUP FOR *** STEEL PILES (HP 12 X 53) | 21 EA | 745.00 | 15,645.00 |
| 0279 | 8328400000-E | SP | PILE DRIVING EQUIPMENT SETUP FOR *** GALVANIZED STEEL PILES (PP 18 X 0.50) | 42 EA | 450.00 | 18,900.00 |
| 0280 | 8364000000-E | 450 | HP12X53 STEEL PILES | 2,250 LF | 35.75 | 80,437.50 |
| 0281 | 8387000000-E | 450 | PP 18 X 0.50 GALVANIZED STEEL PILES | 3,310 LF | 100.00 | 331,000.00 |
| 0282 | 839300000-N | 450 | PILE REDRIVES | 34 EA | 102.00 | 3,468.00 |
| 0283 | 8503000000-E | 460 | CONCRETE BARRIER RAIL | 962.32 LF | 78.00 | 75,060.96 |
| 0284 | 8531000000-E | 462 | 4" SLOPE PROTECTION | 80 SY | 148.50 | 11,880.00 |
| 0285 | 8608000000-E | 876 | RIP RAP CLASS II (2'-0" THICK) | 923 TON | 83.00 | 76,609.00 |
| 0286 | 8622000000-E | 876 | GEOTEXTILE FOR DRAINAGE | 1,025 SY | 3.15 | 3,228.75 |
| 0287 | 8654000000-N | SP | DISC BEARINGS | Lump Sum LS | 53,500.00 | 53,500.00 |

Jul 06, 2017 2:01 pm

North Carolina Department Of Transportation Contract Item Sheets For C203955

Page: 19 of 19

\$24,370,634.28

| Contract Item Sheets For C203955 | | | | | | |
|----------------------------------|--------------|----------|-----------------------|------------------|-------------------|---------------|
| Line # | ItemNumber | Sec # | Description | Quantity Unit | Unit Bid Price | Amount Bid |
| | | | | | | |
| 0288 | 8706000000-N | SP | EXPANSION JOINT SEALS | Lump Sum LS | 66,600.00 | 66,600.00 |
| | | | | | | |

TOTAL AMOUNT OF BID FOR ENTIRE PROJECT

1401/Jul06/Q1676088.41/D1349487025060/E287

EXECUTION OF CONTRACT NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

CORPORATION

The Contractor being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee has entered

| into any agreement, participated in any collusion, or otherwise taken any action which is in restrint connection with this Contract, that the Contractor has not been convicted of violating N.C.G.S. years, and that the Contractor intends to do the work with its own bonafide employees or subcorbenefit of another contractor. | 5. § 133-24 within the last three ntractors and did not bid for the |
|---|--|
| By submitting this Execution of Contract, Non-Collusion Affidavit and Debarment Certification, status under penalty of perjury under the laws of the United States in accordance with the Deprovided that the Debarment Certification also includes any required statements concerning excep | barment Certification attached, |
| N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Emwith a contract with the State, or from any person seeking to do business with the State. By exprocurement, you attest, for your entire organization and its employees or agents, that you are rebeen offered, accepted, or promised by any employees of your organization. | ecution of any response in this |
| SIGNATURE OF CONTRACTOR | |
| S. T. Wooten Corporation | |
| Full name of Corporation | |
| P O Box 2408; Wilson, NC 27894-2408 | |
| Address as Prequalified | |
| Attest Luis & Rose By Lugary | In Salar Vice President |
| deletary/Masiatant Secretary | ppropriate title |
| | |
| Laura E. Rouse Gregory N. | Nelson |
| Print or type Signer's name Print or ty | pe Signer's name |
| | |
| CORPO | RATE SEAL RATIO |
| | |
| | |
| AFFIDAVIT MUST BE NOTARIZED | M W S O |
| Subscribed and sworn to before me this the | |
| | S T |
| 7th day of July 2017. | |
| Signature of Notary Public Debra 5. Brewer | ARY SEAL |
| Johnston County | DEBRAS OF THE |
| ofCounty | My Connoto Any The |
| State of NC | MAY COMPSION AUDIC TO STATE OF THE STATE OF |
| My Commission Expires: 02/05/2018 | A SOCIETY OF THE PROPERTY OF T |
| My Commission Expires: 02/03/2018 | CAROLINA |
| | ROLING |

| Rcv. | 5- | 19. | 1 | ī |
|---------|----|------------|---|---|
| 1 V V - | J- | . <i>-</i> | | |

| Contract No. | C203955 | |
|--------------|---------|--|
| County Cra | ven | |

DEBARMENT CERTIFICATION

Conditions for certification:

- 1. The prequalified bidder shall provide immediate written notice to the Department if at any time the bidder learns that his certification was erroneous when he submitted his debarment certification or explanation filed with the Department, or has become erroneous because of changed circumstances.
- 2. The terms covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal, and voluntarily excluded, as used in this provision, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. A copy of the Federal Rules requiring this certification and detailing the definitions and coverages may be obtained from the Contract Officer of the Department.
- 3. The prequalified bidder agrees by submitting this form, that he will not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in NCDOT contracts, unless authorized by the Department.
- 4. For Federal Aid projects, the prequalified bidder further agrees that by submitting this form he will include the Federal-Aid Provision titled Required Contract Provisions Federal-Aid Construction Contract (Form FHWA PR 1273) provided by the Department, without subsequent modification, in all lower tier covered transactions.
- 5. The prequalified bidder may rely upon a certification of a participant in a lower tier covered transaction that he is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless he knows that the certification is erroneous. The bidder may decide the method and frequency by which he will determine the eligibility of his subcontractors.
- 6. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this provision. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- 7. Except as authorized in paragraph 6 herein, the Department may terminate any contract if the bidder knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available by the Federal Government.

| Contract | No. | C203955 | |
|----------|-----|---------|--|
| County | | | |

DEBARMENT CERTIFICATION

The prequalified bidder certifies to the best of his knowledge and belief, that he and his principals:

- a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property;
- c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph b. of this certification; and
- d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- e. Will submit a revised Debarment Certification immediately if his status changes and will show in his bid proposal an explanation for the change in status.

If the prequalified bidder cannot certify that he is not debarred, he shall provide an explanation with this submittal. An explanation will not necessarily result in denial of participation in a contract.

Failure to submit a non-collusion affidavit and debarment certification will result in the prequalified bidder's bid being considered non-responsive.

| | Check her | e if an expl | anation is att | tached to this | certification. |
|--|-----------|--------------|----------------|----------------|----------------|
|--|-----------|--------------|----------------|----------------|----------------|

| County (ies): <u>Craven</u> | | | | |
|--|--|--|--|--|
| ACCEPTED BY THE DEPARTMENT OF TRANSPORTATION | | | | |
| Ronald E. Davenport, Jr. | | | | |
| F81B6U38A4/A442 Contract Officer | | | | |
| | | | | |
| 7/20/2017 | | | | |
| Date | | | | |
| Execution of Contract and Bonds Approved as to Form: | | | | |
| rr | | | | |
| Docusigned by: Lacy Hunt 705472057DD0445 | | | | |
| Attorney General | | | | |
| 7/20/2017 Date | | | | |
| Date | | | | |

C203955

Contract No.

Signature Sheet (Bid - Acceptance by Department)

| Contract No. | C203955 |
|--------------|---------|
| County | Craven |

CONTRACT PAYMENT BOND

| Date of Payment Bond Execution | July 12, 2017 |
|--------------------------------|---|
| Name of Principal Contractor | S. T. Wooten Corporation |
| • | Fidelity and Deposit Company of Maryland |
| | Zurich American Insurance Company |
| | Attn: Surety Claims |
| | 1299 Zurich Way |
| Name of Surety: | Schaumburg, IL 60196-1056 |
| Name of Contracting Body: | North Carolina Department of Transportation |
| | Raleigh, North Carolina |
| Amount of Bond: | \$24,370,634.28 |
| Contract ID No.: | C203955 |
| County Name: | Craven |
| | |
| | 11 |

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL CONTRACTOR (hereafter, PRINCIPAL) and SURETY above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the principal shall promptly make payment to all persons supplying labor and material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

County C203955

County Craven

CONTRACT PAYMENT BOND

Affix Seal of Surety Company

Fidelity and Deposit Company of Maryland
Zurich American Insurance Company
Print or type Surety Company Name

By Debra S. Ritter, Attorney-in-Fact
Print, stamp or type name of Attorney-in-Fact

Signature of Attorney-in

()

Angela M. Yount
Print or type Signer's Name

Rutherfoord A Marsh & McLennan Agency LLC Company 5605 Carnegie Blvd., Suite 300 Charlotte, NC 28209

Address of Attorney-in-Fact

| 1 | |
|--|--|
| | Rev 5-17-11 |
| Contract No. C203955 | |
| County | |
| CONTR | ACT PAYMENT BOND |
| | CORPORATION |
| SIGNATURE | OF CONTRACTOR (Principal) |
| S. T. Wooten Corporation | |
| Full | name of Corporation |
| D COM D 0400 W/I N 45 Combin | - 27804 2409 |
| Post Office Box 2408; Wilson, North Carolin | a 27894-2408 dress as prequalified |
| | |
| By: | ignature of President, Vice President Select appropriate title |
| | Gregory N. Nelson |
| | Print or type Signer's name |
| Attest Signature of Socretary, Assistant Select appropriate title | |

Laura E. Rouse

Print or type Signer's name

| Contract No. | C203955 | |
|--------------|---------|--|
| County | Craven | |

CONTRACT PAYMENT BOND

Attach certified copy of Power of Attorney to this sheet

| Contract No. | C203955 | |
|--------------|---------|--|
| County | Craven | |

CONTRACT PERFORMANCE BOND

| Date of Performance Bond Execution: | July 12, 2017 | |
|-------------------------------------|--|--|
| Name of Principal Contractor: | S. T. Wooten Corporation Fidelity and Deposit Company of Maryland Zurich American Insurance Company Attn: Surety Claims 1299 Zurich Way | |
| Name of Surety: | Schaumburg, IL 60196-1056 | |
| Name of Contracting Body: | North Carolina Department of Transportation | |
| | Raleigh, North Carolina | |
| Amount of Bond: | \$24,370,634.28 | |
| Contract ID No.: | C203955 | |
| County Name: | Craven | |
| | 11 | |
| | | |

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL CONTRACTOR (hereafter, PRINCIPAL) and SURETY above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the principal entered into a certain contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by it undersigned representative, pursuant to authority of its governing body.

| Contract No. | C203955 | |
|--------------|---------|---|
| County | Craven | _ |

CONTRACT PERFORMANCE BOND

Affix Seal of Surety Company

Fidelity and Deposit Company of Maryland Zurich American Insurance Company Print or type Surety Company Name

By Debra S. Ritter, Attorney-in-Fact
Print, stamp or type name of Attorney-in-Fact

Signature of Attorney

Signature of witness

Angela M. Yount
Print or type Signer's Name

CORPORATION OF THE PARTY OF THE

Rutherfoord A Marsh & McLennan Agency LLC Company 5605 Carnegie Blvd., Suite 300 Charlotte, NC 28209

Address of Attorney-in-Fact

| | Rev 5-17-11 |
|--|---|
| County C203955 County Craven | |
| CONTRACT PERFO | RMANCE BOND |
| CORPORA | ATION |
| SIGNATURE OF CONT | RACTOR (Principal) |
| S. T. Wooten Corporation Full name of C | Corporation |
| • | |
| Post Office Box 2408; Wilson, North Carolina 27894-24 | |
| Address as pro | equalified |
| By: Signature of I | Processident, Assistant Vice President Select appropriate title |
| | Gregory N. Nelson Print or type Signer's name |
| Affix Corporation Attest Signature of Secretary, Assistant Secretary Select appropriate title | rate Seal |

Laura E. Rouse

Print or type Signer's name

Contract No. C203955
County Craven

CONTRACT PERFORMANCE BOND

Attach certified copy of Power of Attorney to this sheet.

ZURICH AMERICAN INSURANCE COMPANY COLONIAL AMERICAN CASUALTY AND SURETY COMPANY FIDELITY AND DEPOSIT COMPANY OF MARYLAND POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Maryland, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Maryland (herein collectively called the "Companies"), by MICHAEL BOND, Vice President, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint Raymond J. GARRUTO, Debra S. RITTER, Martin D. PALLAZZA, Brad W. GIBSON, Angela M. YOUNT, Jenny SNELL, H. Thomas DAWKINS and Wendy E. LAHM, all of Charlotte, North Carolina, EACH its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: any and all bonds and undertakings, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 15th day of May, A.D. 2017.

ATTEST:

ZURICH AMERICAN INSURANCE COMPANY COLONIAL AMERICAN CASUALTY AND SURETY COMPANY FIDELITY AND DEPOSIT COMPANY OF MARYLAND

MLD A

Vice President Michael Bond

Assistant Secretary
Dawn E. Brown

State of Maryland County of Baltimore

On this 15th day of May, A.D. 2017, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, MICHAEL BOND, Vice President, and DAWN E. BROWN, Assistant Secretary, of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposeth and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

Constance A. Dunn, Notary Public My Commission Expires: July 9, 2019

Constance a Dunn

POA-F 177-0134B